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MEDICAL RECORD

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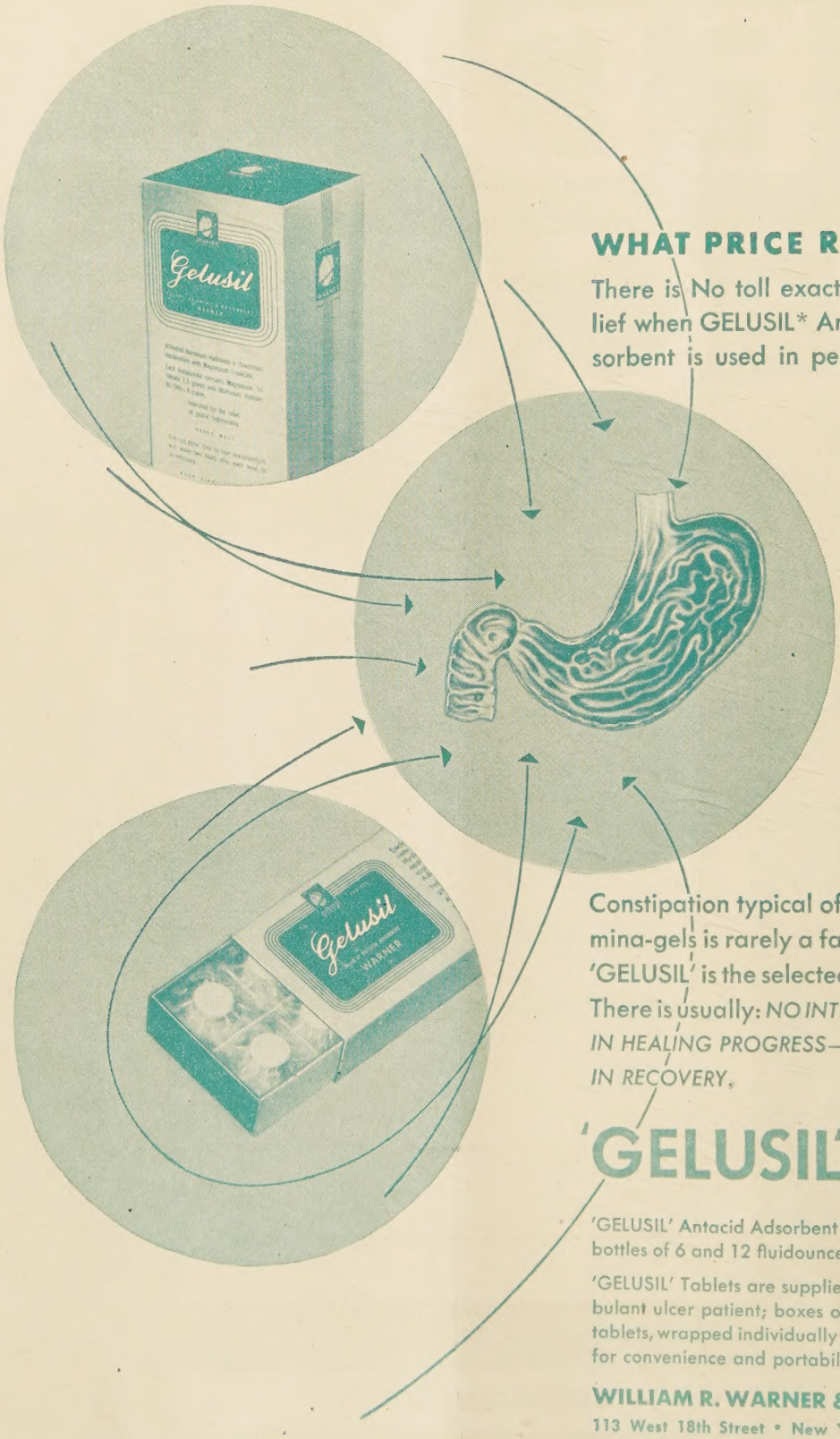
It is the mind which is really alive and sees things, yet it hardly sees anything without preliminary instruction.

—Charcot

SEPTEMBER 1947

Vol. 160, No. 9



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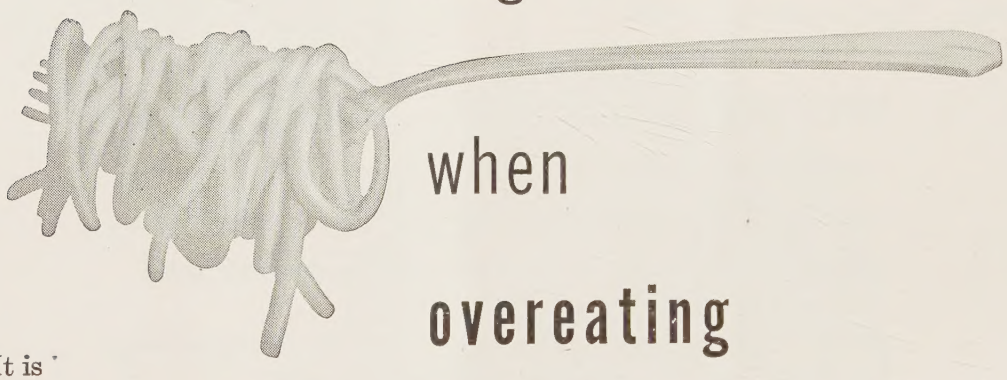

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SEPTEMBER, 1947

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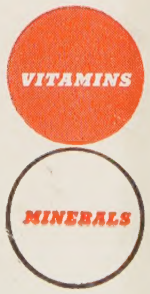

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War-Time German Drugs

A new blood substitute to replace plasma in emergency treatments, a blood sugar catalyzer for diabetics and many new "sulfas" and vitamins are among the drugs and medicinal products which have been discovered in the secret files of the German pharmaceutical industry.

Among the many drugs included among the drugs and chemicals which are now under study in this country are Periston, a blood substitute; Adrenochrome; Lopion; "sulfa" drugs such as Marfanil, Tibatin and Badional; and the vitamin preparations citrin, Hemodal and Priovit.

Adrenochrome, produced by oxidation of adrenalin, is a drug which acts as a blood catalyzer of sugar in the treatment of diabetes. It is not a substitute for insulin, but an adjunct to it.

Lopion, an organo-gold compound, has been tested against tuberculosis. Although favorable results had not been obtained previously with this type of therapy, this drug may be the answer to part of this problem.

The new "sulfa" drugs had not been released here, having been used by the German army. Results attained by American workers with Marfanil do not bear out the German claims of activity. It is supposedly effective against anaerobic bacteria of gas gangrene, but is relatively ineffective against aerobes. One feature of the drug is that unlike other "sulfa" drugs it is not antagonized by p-amino-benzoic acid. Tibatin is especially active in pneumonia and being relatively non-toxic may be administered intravenously. Badional is a new drug claimed to be effective in bronchopneumonia. It is administered by inhalation. This drug is highly soluble, neutral in solution, and is supposedly effective in lupus of the skin. It is being tried experimentally in pulmonary tuberculosis.

Among the vitamin products revealed as having been studied extensively by enemy research chemists and doctors is citrin, the permeability factor "P" which is obtained from natural sources. Research is in progress for increasing its solubility in water. Hemodal, a form of vitamin K, has been made synthetically. It was available in two forms, one for injection and the other for oral use. Priovit is a special combination of water soluble vitamin B (B_1 and B_2), with synthetic vitamin C and natural vitamin P.

Dr. D. Roy McCullagh in charge of the biochemical activities of the research laboratories of Schering Corporation has recently turned over to government officials the report of his study of new German drugs and pharmaceutical procedures. His investigations involve nearly six months of intensive interrogation of German pharmaceutical and chemical experts along with an investigation of their plants and research institutes.

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Open Forum

THERAPEUTIC MYTHS

T. SWANN HARDING
Falls Church, Va.

A distinguished physician tells this as his favorite story: He had a young, female, redheaded patient who required the services of a nurse, so he brought one to her home. The nurse was pleasant and competent, but the patient's mother called him aside and remarked that, since her daughter's hair was red and the nurse's also was red, they could not possibly get along with one another. The physician derided this as superstition. The mother gave in.

A week or so later the physician was pleased to discover that nurse and patient were getting along excellently, giving added proof that it is fallacious to believe redheads must collide. Then he happened to observe the nurse's hair closely. That which grew immediately up from the follicles was not red. The nurse readily confessed that she had lacked time to have her hair treated after the usual interval and that she was not a redhead at all. The physician uses this story to warn young doctors and medical research workers against the evil of thinking they know the answers when they don't.

Well, look over the medical texts and observe how much was known for certainty yet wasn't true at all. You will find potassium iodide mentioned as a specific for aneurism; prescriptions guaranteed to "dissolve" cataract; syrup of hypophosphites, iron, digitalis, and strychnine recommended for feeble-mindedness, and so on. Look up what W. B. Inglis Pollock had to say in the *Glasgow Medical Journal,* Oct., 1917.

Or consider the article by J. W. Linnell and W. A. R. Thomson in the *British Medical Journal,* November 6, 1943. One of them gave a paper, first in a London hospital, later provincially, and then was attacked by his colleagues for depriving them of some of their most valuable methods of treatments, in reality, by use of placebos. The question arises, if the methods are therapeutically useless, should they be used? The interrogatory reply is that if they are not used, what should replace them for the comfort of patients who credit therapeutic myths?

Hypertension is commonly symptomless and it may exist throughout life without inconveniencing the one who has it. Since its essential cause is not understood, how can it be treated rationally? The same might be said for the common cold. As to blood pressure, even if it is reduced, as it can be with sodium or potassium thiocyanate, is this really beneficial? Except for the obese, who do profit from dietary reduction, no diet is effective in hypertension.

As for hypotension, it is sometimes a blessing, and certainly the usually frail, asthenic, sickly type of person who has it should not be frightened about it. While it is often prescribed, the giving of thyroid substance in such cases is probably ill-advised. Finally, there is no known treatment for thickened or sclerotic or narrowed arteries, nor does it even help to tell the patient too explicitly about his pipestem arteries. The cause of arteriosclerosis is not yet unveiled.

To continue with the circulatory system: Hunter in 1938 claimed there was no good evidence for prescribing calcium in cases of hemorrhage, though vitamin K was of value in jaundice with oozing. Hundreds of nonanemic persons are still being treated for anemia, there either having been no measurement of the hemoglobin or of the number of erythrocytes, or there having been a mistake by a low-grade laboratory technician using a low-accuracy hemoglobinometer off 10 or 15 percent in reading. Many iron preparations used for hypodermic injection are too weak and the iron would usually work as well if inexpensively administered orally.

Most physicians give injections of liver extract in cases of secondary anemia, though expert hematologists say this practice is illogical and largely useless. In the same way, physicians advise low-fat diets for those with gallbladder conditions, though no such diets are

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Disorders of the Nervous System

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FREDERICK W. SEWARD, M.D., Director FREDERICK T. SEWARD, M.D., Resident Physician CLARENCE A. POTTER, M.D., Resident Physician

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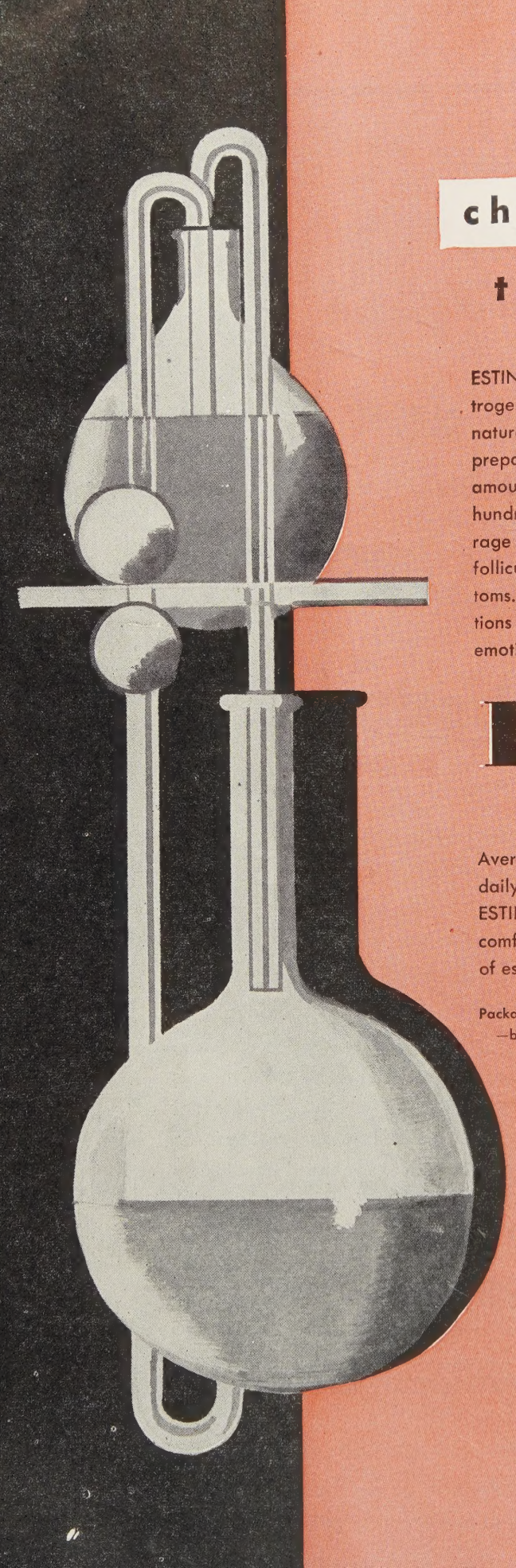

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1. Bickers, W.: Am. J. Obst. & Gynec. 51:100, 1946.

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recommended for those whose gallbladders have been removed surgically, and a high-fat diet would be expected to stir the organ to activity and beneficially flush it out. Liver extract is probably best in primary anemia; the use of hydrochloric acid, though not abandoned, should be.

Evans and Hoyle, in 1933 and 1944, tested sodium nitrite, mannitol hexanitrate, erythrol tetranitrate, potassium iodide, phenobarbital, chloral, morphine, papaverine, phenacetin, diuretin, euphyllin, belladonna, digitalis, lacarnol, and harmol without finding any one of them more effective than a known placebo in angina pectoris. Heart murmurs still mean heart disease to many physicians who then prescribe digitalis, which is often unfortunate. Most people with murmurs need no treatment; those with heart disease do not need digitalis. Why medicate a patient for years for a thrombotic scar which does not affect the heart's efficiency?

Paroxysmal tachycardia is alarming to the patient but he needs reassurance rather than medication if the electrocardiogram is essentially normal. The attacks are often over before a dose of medicine can act. Quinidine or acetyl-beta-methylcholine chloride, but not digitalis, might help. Digitalis and strophanthin are not indicated in shock.

Lugol's solution does not cure toxic goiter, though it is useful for preparing a patient for operation, which latter is the best treatment. The common cold is a much treated ill which would go better untreated with drugs to which the patient may thus unfortunately sensitize himself. Postural drainage rather than expectorants is best in bronchitis. "Helping" the pneumonia patient's heart with digitalis will sometimes turn the tide against him and cause his death. The superfluous use of drugs for constipation is as common as their use in colds or the vagaries of vitamin therapy.

Tons of vitamins, bismuth, pepsin, strychnine, belladonna, phenobarbital, bromides, and sulfonamides are used the nation over with little if any study of the needs of the particular patient and his case. How can vitamins help a patient who already has enough? Is strychnine of any value at all? Is it a tonic? A bowel stimulant? Of what use are antispasmodics when smooth muscle is at fault? People do demand medicines. They will get proprietaries if the doctor does not yield to their whim and prescribe a placebo and drug firms will always reap fortunes from this credulity.

Think while diagnosing and prescribing. *Think* of disease in terms of altered physiology and of drug therapy as an effort to help nature restore altered functions to normal. *Think* of the wide variations normality itself can display without injury to the individual. Placebos harm most when they destroy clarity of vision and the tendency of the physician who uses them to employ them instead of thought.

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Federal Hospital and Health Center Appropriations

Thomas Parran, Surgeon General, U. S. Public Health Service, Federal Security Agency, has recently announced that construction of 225 million dollars' worth of hospital and health facilities during the fiscal year of 1948, ending June 30 next year, will be possible under the appropriations act recently signed by the President.

Although no Federal funds were directly appropriated for this purpose, the act sets up a procedure, which obligates the Federal government to pay up to $75,000,000 as its share of approved hospital construction. Since the Federal government pays one-third of the cost, this brings the potential combined total of Federal, State and local funds to $225,000,000. Under this arrangement, States need not delay their hospital construction plans since they have the assurance that any construction project approved by the Surgeon General creates a contractual obligation on the part of the Federal government to meet its one-third share of the cost.

This legislation implements the construction phase of the Hospital Survey and Construction Act passed by Congress last year. Funds may be used for health centers, laboratories, clinics and other medical facilities, as well as for hospitals.

Electroencephalography

According to Dr. Basu K. Bagchi, in charge of electroencephalography in the University's Neuropsychiatric Institute, brain waves are being used by University of Michigan doctors to help diagnose epilepsy, brain injuries, and damages to the central nervous system.

It is now felt that brain tumors can be identified and precisely located in most cases. Considerable information also can be obtained as to whether an operation would be beneficial.

By use of these newer methods, Dr. Robert C. Bassett, assistant professor of surgery at the University, operated and removed a brain tumor on the basis of a diagnosis made through use of EEG's alone. Usually, however, other methods of diagnosis are used together with EEG's.

Indications that epilepsy is present may be noted when brain waves of various parts of the brain change for a time in voltage or in frequency. The type of epilepsy, however, cannot always be determined.

In a significant number of cases use of the electroencephalograph has supplied the first conclusive evidence of the localization of brain damage when clinical and X ray diagnosis has been inadequate or varying.

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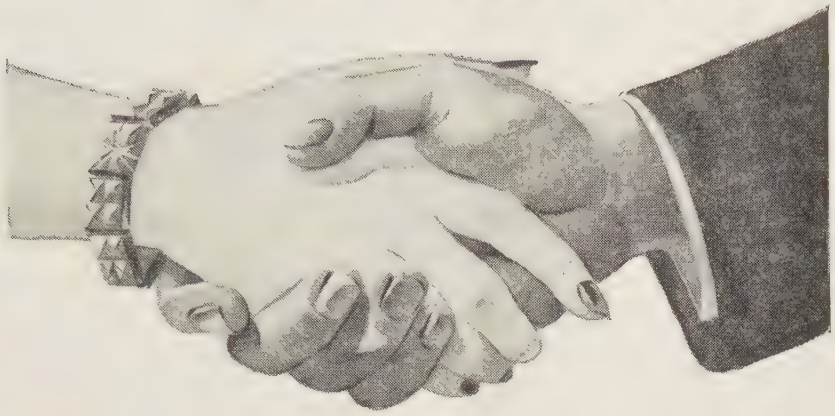

ALL doctors have their "G.P.'s" (grateful patients), but have you ever seen a more grateful patient than the one who has suffered from myxedema? As Rose[1] states in regard to thyroid therapy of myxedema, "The therapeutic rewards are among the richest in medicine."

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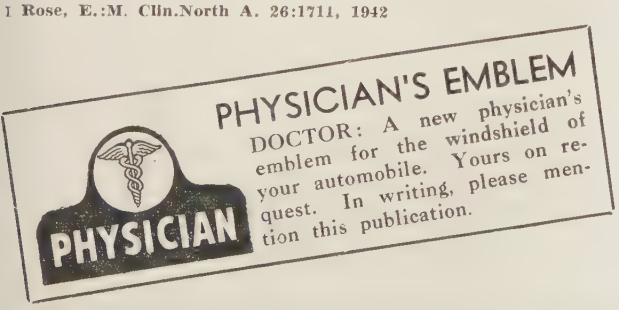
1 Rose, E.:M. Clin.North A. 26:1711, 1942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Treatment of Lung Abscesses

In a Symposium at the Army Medical Center, Dr. Brian B. Blades, Walter Reed General Hospital, outlined the refinements in operative technics, improved anesthesia and the benefits of antibiotic protected surgery which have made it possible to apply safely pulmonary resection for the treatment of chronic, pulmonary abscesses. The approximate mortality rates in the surgical treatment of pulmonary abscess in 1942 was 15.2 percent. At the present time operative mortality for excisional surgery in the treatment of chronic pulmonary abscess is about 5 percent; moreover, the number of satisfactory cures has increased from approximately 57 percent in 1942 to more than 80 percent at the present.

During the past war the incidence of acute pulmonary abscesses in members of the armed forces was low. It is not surprising that pulmonary abscesses secondary to wounds of the chest were uncommon since it has been established for many years that the lung has tremendous resistence to infections introduced by foreign bodies. It is of interest however, that so few cases of acute, fulminating pulmonary abscesses were found in the millions serving in the armed forces. Some idea of the rarity of acute pulmonary abscesses requiring drainage can be obtained when one realizes that during the entire war only three lung abscesses were drained at Walter Reed General Hospital. Experiences of others in large Army Hospitals were similar.

The rarity of acute, fulminating pulmonary abscesses and the replacement of this lesion by more chronic, idolent type of pulmonary suppuration may be explained by two factors. Individuals on military duty have good dental care. Hence, one of the chief etiologic factors for the production of pulmonary abscesses was eliminated. The almost universal use of the sulfonamide derivatives and later penicillin in all types of pulmonary disease probably accounts for the absence of fulminating infections and explains the existence of a more chronic, less severe type of abscess.

Since patients were not extremely ill, there was a tendency to delay surgical intervention and, in fact, probably in many cases the infection responded to antibiotic therapy and surgical intervention was avoided. In cases in which tissue destruction was sufficient to require operative treatment the lesions were apt to be multiple involving an entire lobe and in some cases the entire lung. Extiraption of the diseased tissue in these cases gave excellent results. Except in very early cases where the abscesses were well circumscribed and drainage was instituted early, final results were unsatisfactory because of the presence of multiple abscesses and destruction of pulmonary parenchyma.

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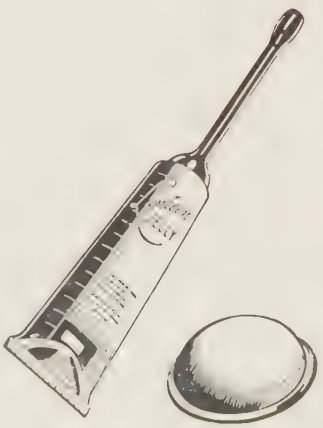

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X-Rays Effective in Treatment of Wound Infection

Dr. James F. Kelly of the Department of Radiology of Creighton University School of Medicine, Omaha, Neb., says there is no justifiable reason for not using x-ray irradiation for the prevention and treatment of wound infection.

"It is simple and safe to produce; it costs little and the dangers from such application of the rays are less than the dangers associated with many other forms of prophylaxis or therapy," he said in a paper delivered before the Section of Radiology of the American Medical Association.

Dr. Kelly said that when x-rays are applied in acute infection there are several favorable clinical reactions: slowing of the pulse, lowering of temperature, slowing of the respiratory rate, decrease of pain, localization of the infection, conservation of tissue, prevention of secondary infections, shortening of the course of the disease and, above all, there is an unequivocal decrease in mortality.

Dr. Kelly said that x-rays have proved very effective in the prevention and treatment of gas gangrene, the bane of armies during wartime.

Dr. Kelly also touched on the effectiveness of x-rays in the treatment of acute spreading peritonitis.

1946 Cancer Rate

At least two out of every 1,000 persons in New York State developed some form of cancer in 1946, according to a report compiled recently by Dr. Morton L. Levin, director of the Department's Division of Cancer Control. During the past year, 13,616 new cancer cases were reported to the Division by physicians, hospitals, tumor clinics, and laboratories throughout the State, except New York City where cancer is not reportable. Detailed reports on cancer cases in each city of 10,000 or over and in each county have been made available to district health officers and to city and county health commissioners.

Physicians reported the disease as "early" in 27.2 percent of the cases and "moderately early" in 37.4 percent. More than half, 55 percent, were in women and 45 percent in men. Seventeen percent of the women and only 9 percent of the men were under forty-five years of age. There were 113 cases among children under fifteen.

The type of cancer which occurred most frequently in men was cancer of the skin and lip. Next in frequency were cancer of the prostate; stomach; large intestine; rectum; bladder; and lung. Cancer of the breast was the most frequent type in women, followed by cancer of the uterus; skin and lip; large intestine; ovary; stomach; and rectum.

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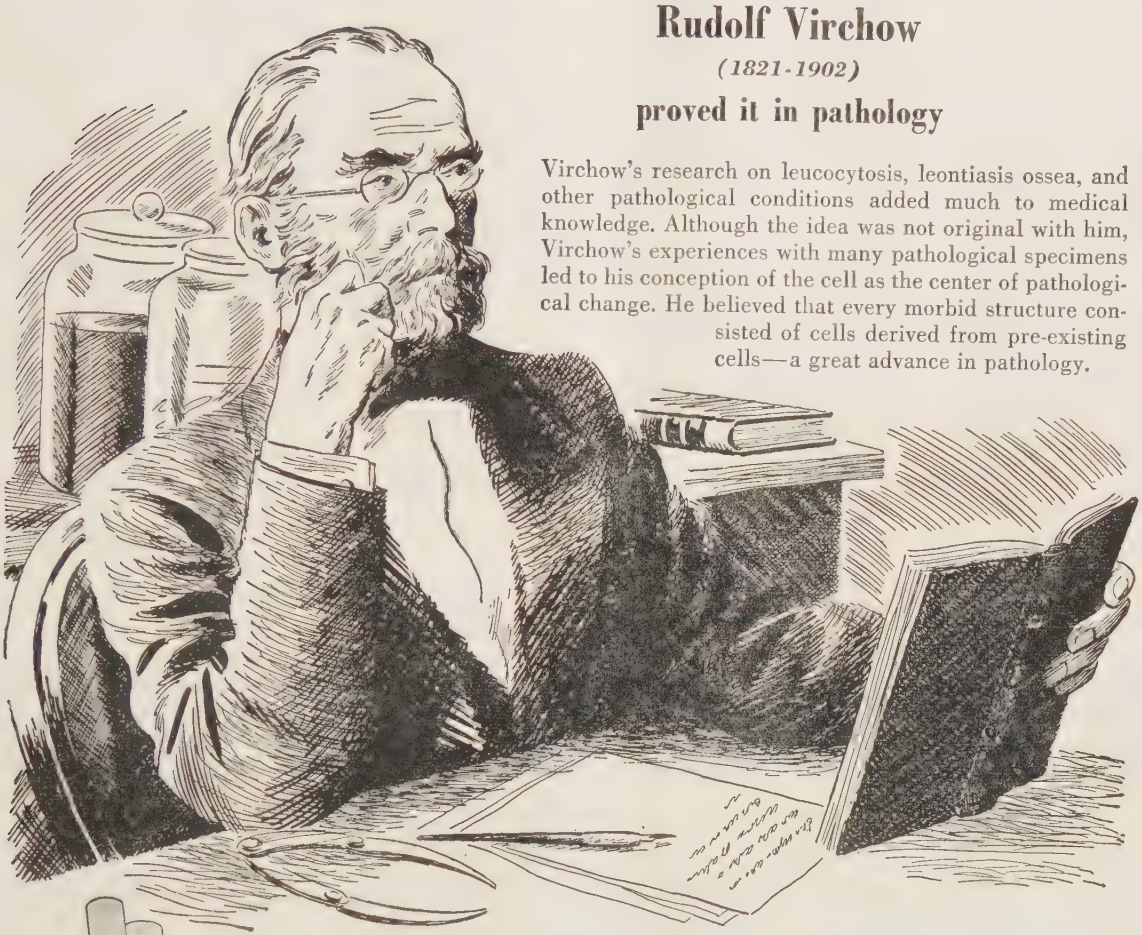
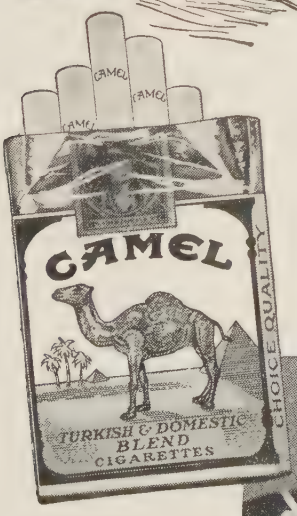
(1821-1902)

proved it in pathology



Virchow's research on leucocytosis, leontiasis ossea, and other pathological conditions added much to medical knowledge. Although the idea was not original with him, Virchow's experiences with many pathological specimens led to his conception of the cell as the center of pathological change. He believed that every morbid structure consisted of cells derived from pre-existing cells—a great advance in pathology.



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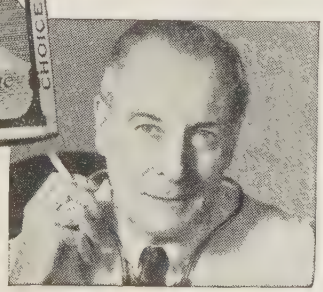

According to a recent Nationwide survey:

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Critique

Korean medicine: For many years oriental superstition has defeated modern medicine in Korea. For instance in one district a consumptive patient was treated by drinking the urine of his eldest son and a woman suffering from puerperal fever by drinking the water in which a miscarriage had been steeped. Swarms of flies being the sign of a good harvest could not be destroyed. Cholera was treated by giving the patient the flesh of a cat and leprosy by eating human flesh or the penis of a boy.

Rush: "By virtue of his social and professional prominence, his position as teacher and his facile pen, Benjamin Rush had more influence upon American medicine and was more potent in the propagation and perpetuation of medical errors than any man of his day. To him, more than any other man in America, was due the great vogue of vomits, purging, and especially of bleeding, salivation, and blistering, which blackened the record of medicine and afflicted the sick almost to the time of the Civil War." (Note 2, p. 19, Ashburn's *History of the Medical Department of the U.S. Army.*)

Typhoid: On page 155 of his *History of the Medical Department of the U.S. Army,* Ashburn says: "It is evident (this was the late 1890's) that doctors were so wholly committed to the view that typhoid was always a water-borne disease that, when the facts did not seem to conform, hypotheses were formulated to bring them into conformity. A somewhat similar psychology was displayed in France during World War I when some were so convinced that typhoid vaccination would always prevent typhoid fever that they failed to recognize typical cases with hemorrhage, and even attempted to explain away the characteristic post-mortem findings."

Ancient medicomagic: Deer disliked snakes, hence snake bite could be avoided by wearing a deer's tooth; if bitten, extract from the pregnant womb of a doe was recommended. The mole was worshipped because he dug in darkness; the chameleon was credited with magic powers. Pluck the first hair of a newborn infant and prevent baldness. Pour vinegar on door hinges to prevent headache. Apply an owl to a woman's right breast and she will compromise herself while asleep! Earth from a cartwheel rut would cure mouse bite; milk from the mother of twins was good medicine; wearing the first tooth lost by a child cured female diseases; eagles gazed long at the sun hence their gall would cure eye trouble. Kiss a mule and pass on your catarrah!

Reliability of gastric responses? T. Wingate Todd and Wilhelmine Kuenzel discussed this subject in the *Journal of Laboratory and Clinical Medicine,* for August 1929, outlining, apparently for the first time, various factors that must be considered if gastric studies were to become at all reliable, such as position, physical condition of the subject, time of day, affect of body posture on stomach position, change in weight if the experiments are long continued, occupation, and season of the year. They disregarded all previous work as faulty because only trained stomachs under absolutely controlled conditions could be used. This basis is essential. The subject must be both trained and willing. The old large meal on the fasting stomach was said to mean nothing, purgation to be unnecessary; the regular routine of life should be followed. Time of day has no effect unless fatigue is involved. The subconscious effect of roentgenologic examination must also be considered.

Bearing witness: Were the flying saucers real or unreal? Who knows? Our capacity for self-deception is all but incredible. In his *Art of Cross Examination,* Francis L. Wellman showed that artful lawyers could batter down the most truthful story of the most sincere witness as well as smash the lies of false witnesses. He proved that the best of us could not possibly tell a straight and absolutely honest story of an event to save our lives. No matter how composed we are it is difficult for us to speak truly, while witnesses in court are notoriously excited. E. J. Swift's *Psychology and the Day's Work* proved that highly educated persons could not describe a prearranged incident correctly, They saw things that did not happen and overlooked what did happen. Five reports of one incident by twenty-nine unusually capable witnesses did not contain a single element of truth, yet each of their stories would have been accepted as an eye-witness account of tragedy. Suggestive questions can be framed to get any answer desired. A clipping read then passed along by word of mouth, became unreliable the second time told and lost all semblance of truth by the eleventh time. Doctors questioning patients get a quality of response quite similar to that lawyers secure from witnesses. Chances of truthful narration are small under the best of circumstances, and patients are usually emotionally moved when they come to see the doctor. We believe we have seen and experienced things we have not, as a carefully kept diary will prove to us years after the event. The expectation of an act causes it to be seen. Even experts are notoriously unreliable on the witness stand and physicians have repeatedly encountered there persons whom they had declared under oath some years before must soon die. Then they got their damages; now they are in fine health. Doctors repeatedly have testified in the most glib way about matters regarding which they knew nothing. Many a man has been executed on the false testimony of a sincere witness.

The Critic

New Treatment for Undulant Fever

Speaking before the Second International Congress for Microbiology in Copenhagen, Denmark, recently Dr. I. Forest Huddleson, Michigan State College research scientist explained a revolutionary new treatment for undulant (Malta) fever.

In describing the treatment which was developed in Michigan State College laboratories during three years of research, Dr. Huddleson told the Congress representatives that the method involves a new application of sulfa drugs. Since the drugs were first introduced several years ago, they have been used with little success in combating undulant fever particularly in advanced cases.

Three years ago Dr. Huddleson noted in test-tube research that sulfadiazine failed to destroy effectively pure cultures of bacteria in a test-tube. However, if the bacteria were in a solution containing anti-serum, the killing effect was complete.

Following this lead, the M.S.C. scientist theorized, contrary to general opinion, that the sulfa drug itself does not actually destroy germs, but simply increases the action of the antibodies in the serum, these in turn killing the harmful bacteria. This theory, was proved beyond a doubt in forthcoming months of laboratory research.

It was also learned that inroads of the fever after several weeks, cause the bloodstream to become loaded with inactive antibodies unable to resist further the destructive germs. When sulfa is applied at this stage, the inactive antibodies counteract the actions of the drug. As a result, the bacteria continue their multiplication and activity in the body.

With these findings at hand, Dr. Huddleson experimented with the introduction of new, active antibodies into the bloodstream of the patient at the time sulfadiazine is administered.

First tests were on guinea pigs in various stages of undulant fever, or brucellosis, infection. Even the oldest and most hopeless cases quickly cleared up. Four case histories of completely successful treatment of humans are now recorded. In each case the patient was in such serious condition and fever was so high that death was imminent. Use of the new treatment caused temperatures of the patients to descend to normal, or below normal, and all symptoms to disappear within twenty-four hours. Recovery followed.

In its present form the treatment consists of injecting whole blood into the system of the patient and then administering sulfadiazine in small amounts for one week. Dr. Huddleson expects to be able to perfect a compound that will enable a physician to inject the sulfa and the antibodies into the bloodstream simultaneously without relying on a blood bank.

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Typhoid Fever Incidence

Only 53 cases of typhoid fever occurred in upstate New York during 1946 compared with 71 in 1945.

An annual decline of approximately 25 percent in typhoid fever incidence has been observed for the past decade and has continued during the first six months of 1947. With the knowledge derived from studies made by this department that only 2.9 percent of all cases of typhoid fever become chronic carriers, it is apparent that during 1946 probably not more than one or two new carriers resulted from the reported number of cases. Bearing in mind that over half of the registered carriers are over sixty years of age and that each year far more carriers die than develop as a result of the reported cases of typhoid, one can confidently predict, barring unforeseen extensive outbreaks, that typhoid fever will shortly reach the vanishing point in upstate New York.

At the close of 1946, 479 typhoid carriers were under supervision in the upstate area. Twenty-one carriers were added to and 21 were removed from the register during the year. Twelve were discovered as a result of epidemiological investigation of sporadic cases of typhoid; 4, as a result of routine culturing; 3, by means of release cultures; 2, on the basis of information furnished by other state departments of health.

Life Insurance Medical Research Fund

More than a half-million dollars for research in heart disease will go out to U.S. and Canadian colleges, hospitals and students from the Life Insurance Medical Research Fund in 1947, it was announced recently by M. Albert Linton, chairman of the Fund. The 1947 allocations raise the total of all funds granted by the organization since 1945 to well over the million dollar mark.

Forty-eight separate grants-in-aid, thirteen postgraduate fellowships and one student fellowship were listed in the Fund's announcement. All of the research and study being sponsored was confined to problems in diseases of the heart and arteries, which in the United States is now the most prevalent cause of death.

Scientific director of the Fund is Dr. Francis R. Dieuaide, clinical professor of medicine on the staff of the College of Physicians and Surgeons of Columbia University.

Two types of fellowships are granted by the Fund, the senior fellowships to graduates who have a doctor's degree and student fellowships to undergraduate students in medical schools who wish to take an extra year for training in scientific research. Both senior and junior awards are for work and study at approved institutions under specified supervisors, and range in value from $1,500 to approximately $4,000.

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1. Youmans, J. B.: Virginia Med. Monthly, 72:238, June, 1945

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THE CHANGING INCIDENCE AND MORTALITY OF DISEASE IN RELATION TO CHANGED TRENDS IN NUTRITION

W. J. McCORMICK, M. D.

Toronto, Canada

During the past century there has been a general downward trend in the incidence and mortality rates of infectious diseases, notably tuberculosis, pneumonia, diphtheria, scarlet fever, whooping cough, rheumatic fever, typhoid fever, and erysipelas; also a similar decline in puerperal and infant deaths. During the same time there has been a marked shift in the age incidence of a number of infectious diseases from infant to older age groups and a marked general reduction in the case-fatality rates.

The usual explanation offered for this changed trend in disease has been the forward march of medicine in prophylaxis, therapy, and public-health protective measures; but, from a study of the literature it is evident that epidemiologists generally recognize that these changes in incidence and mortality have been neither synchronous with, nor proportionate to such measures.

Considering each disease separately, evidence regarding the changed trend will be given, and in the discussion following an attempt will be made to track down the unidentified prophylactic factor, which the author believes to be nutritional, and fit it into the picture of each disease.

Tuberculosis

Tuberculosis, formerly known as the "Great White Plague", consumption or phthisis, was responsible for the death of one-fifth of all mankind in western Europe at the beginning of the 19th century. In London the rate was even higher—30 percent. At that time the yearly death rate from this disease in western Europe has been estimated at 1,000 per 100,000 population. From 1812 to 1840 the death rate from tuberculosis in the American cities of Boston, Philadelphia and New York was about 400 per 100,000, while in Budapest in 1874 the rate was double this amount.

During the past century there has been a consistently steady reduction in mortality from tuberculosis until at present the rate in England is 69, in Canada 45.8, and in the United States 41.3 per 100,000. The orderly rate of this reduction may be seen by reference to Table 1, from Pringle (1),

TABLE 1

Yearly average tuberculosis death rates per 100,000 in city of Ipswich, England, in ten year periods, 1840-1940

Decennia	*Males*	*Females*	*Both Sexes*
1841-1850	389	399	393
1851-1860	327	350	340
1861-1870	339	320	329
1871-1880	321	292	305
1881-1890	279	257	268
1891-1900	243	195	217
1901-1910	212	158	183
1911-1920	168	135	151
1921-1930	117	86	100
1931-1940	76	63	69

which shows a decline in death rate from tuberculosis in the city of Ipswich, England, during the past 100 years (1841 to 1940) from 399 to 69 per 100,000. These figures, indicating an almost even decline throughout the century, are closely parallel to the figures for a corresponding period in Massachusetts, in which a reduction of mortality from 444 to 36 per 100,000 occurred between 1859 and 1939. At the middle of this period the rate had declined to 254, and previous and subsequent to this date the decline followed an almost even grade.

A noticeable feature of the mortality trend of this disease has been a shift in the age incidence. Forty years ago the peak for males fell in the third decade of life. It now falls in the 50-to-60-year-age group. The rate for the under-5-year group has also shown a disproportionately greater reduction. The under-1-year mortality rate for tuberculosis dropped from 1000 to 645 per 100,000 living between 1868 and 1900. In this same age group, from 1900 to 1932, the rate fell to 39. Apparently tuberculosis is increasingly becoming a disease of older age groups.

During and following the First World War and the recent Second World War, there has been a sharp rise in the incidence and mortality from

tuberculosis in Europe, particularly in the countries most involved. According to *Time* (Apr. 14, 1947), tuberculosis, on the rise for the first time in a century, is now Europe's No. 1 killer. Germany, which formerly had one of the world's lowest T. B. death rates, now has one of the highest. In Berlin alone, 150 deaths and 400 new cases are reported weekly. The U. S. occupation zone has 117,983 T. B. cases. In Poland the monthly T. B. death rate is estimated at 18,000, mostly children. In Greece there are 150,000 severe cases with only 5,000 T. B. hospital beds. Roumania, with a population of 16,500,000, has 600,000 T. B. cases. Yugoslavia has an estimated 157,000 cases.

Pneumonia

At the beginning of the present century pneumonia stood ahead of tuberculosis as a cause of death. At that time the famous Osler referred to this disease as "the old peoples' friend", because it took so many of the aged at a time when life became burdensome. During the last half century there has been a steady decline in mortality from this disease, with the exception of the up-surge in 1918 to 1920 as a result of the post-war influenza pandemic. Since 1900 the yearly death rates for pneumonia in the United States, per 100,000, at five-year intervals, were as follows: 1900-202.2, 1905-169.3, 1910-155.9, 1920-207.3, (influenza pandemic), 1925-121.7, 1930-102.5, 1935-104.2, 1940-70.3, 1944-48.6. A closely similar decline in mortality from this disease has occurred in Canada.

Diphtheria

Prior to the present century, diphtheria, known also as malignant angina, membranous croup, angina suffocans, garotilla, etc., was the major scourge of infancy and childhood. Following the Napoleonic wars, intensive epidemics occurred in England, France and other European countries. The virulence of these outbreaks was so great that frequently whole families were wiped out. In one French family of seventeen there were thirteen deaths in one epidemic. The case-fatality rates in these early times were very heavy. In 39 epidemics, from 1557 to 1805, an average rate of 80 percent has been reported (Ozanam). From 1805 to 1830 the case-fatality rate has been estimated at 25 percent (Academie Royale de Medicine). At present the case-fatality rate in Ontario is approximately 10 percent.

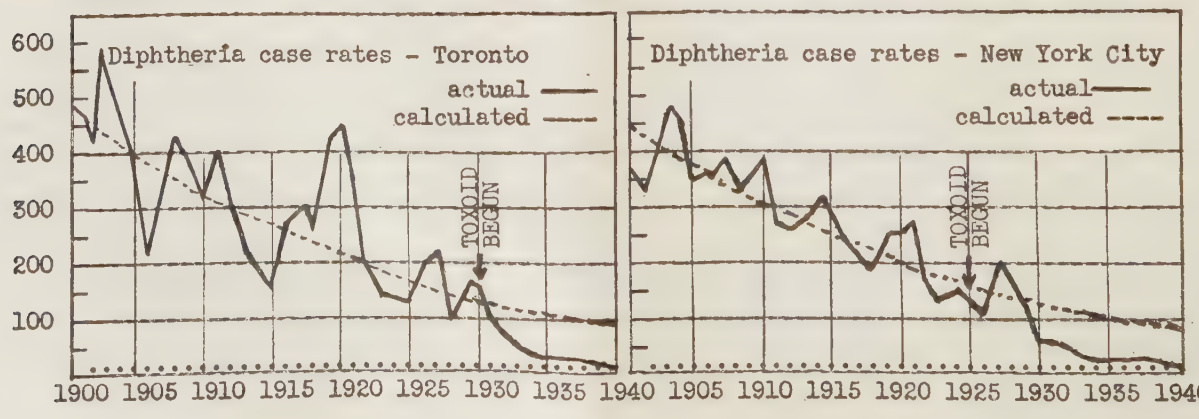
The modern trend of this disease is shown by reference to the mortality records of the city of Toronto which go back to 1885. The average yearly deaths per 100,000, for consecutive ten-year periods (1886 to 1945, inclusive), were as follows: 132.0, 66.0, 34.5, 19.7, 8.2, 0.3. The diphtheria death rates for the United States follow a closely similar trend, the figures being as follows: 1900-40.3, 1910-21.1, 1920-15.3, 1930-4.9, 1940-1.1, 1944-0.9. These figures clearly show a consistently steady reduction in mortality which began over sixty years ago.

Recently, however, there has been a war-time increase in the incidence of diphtheria in both Europe and America. In Halifax, N. S., in 1940, there was an epidemic of considerable intensity involving both the civilian and military population of the city. There were 891 cases in all,—588 civilians and 303 in the armed forces. An unusual feature of this outbreak was the high proportion of adults affected, 69.2 percent of the cases being over fifteen years of age. In Ottawa, Ontario, in the fifteen months prior to November, 1946, there were 204 cases of diphtheria and 32 deaths, including a number of non-residents who were treated in the city, thus indicating a case-fatality rate of 16 percent.

A similar war-time increase in diphtheria has been noted in the United States. According to *Health News,* Aug. 19, 1946, "the increase in diphtheria morbidity and mortality in upstate New York, which began in 1945, has continued in 1946, with 231 cases and 21 deaths being reported this year, the highest since 1934." Baltimore also has had a steady increase in diphtheria since 1941, reaching epidemic proportions in 1944 with 142 cases and 9 deaths.

Recent reports from Europe also indicate that the war-time and post-war incidence of diphtheria has assumed almost pestilential proportions, being very virulent with a high case-fatality rate. In 1943 about 630,000 cases were reported in European countries in which records were available. Including countries in which records were not available, it may reasonably be assumed that there were fully 1,000,000 cases in that year, with about 50,000 deaths. In the years 1944 and 1945, with European

DIPHTHERIA - CASE RATES PER 100,000, TORONTO, CANADA, AND NEW YORK CITY, 1900-/40



conditions even more chaotic, it has been estimated that the toll of 1943 has been maintained.

Scarlet Fever

The mortality rates for scarlet fever have been on a steady decline since before the beginning of the present century. The trend of this disease is shown by the average yearly death rates per 100,000 in the cities of Toronto and Montreal for consecutive five-year periods from 1890 to 1945, which are respectively as follows: 36.6 and 66.0, 18.8 and 15.4, 24.7 and 35.8, 12.8 and 11.6, 17.9 and 22.2, 4.4 and 8.4, 5.7 and 12.8, 1.9 and 6.8, 1.5 and 3.6, 2.2 and 2.5, 0.5 and 0.4. The mortality decline for this disease in the United States has been very similar, the rates per 100,000 being as follows: 1900-9.6, 1910-11.4, 1920-4.6, 1930-1.9, 1940-0.5, 1944-0.3.

The case-fatality rate for this disease has also declined greatly in this same period. In the city of Toronto, prior to 1900, the case-fatality rate varied from 10 percent to 20 percent. This rate has gradually declined until during the last ten years it has varied from ¼ percent to 1 percent. A similar decline has occurred in the Province of Ontario as a whole.

Whooping Cough

The mortality rates for whooping cough have also shown a gradual decline since before the turn of the century. The average annual death rates per 100,000, for consecutive five-year periods from 1895 to 1945, in the city of Montreal, were as follows: 32.4, 30.6, 19.6, 21.2, 20.4, 14.7, 12.3, 8.8, 6.8, and 4.2. The rates in other large cities throughout Canada and the United States have shown a similar trend.

Rheumatic Fever

The declining mortality from this disease in the United States and Canada is well shown by the statistics of the Metropolitan Life Insurance Company (Table 2) in which the average yearly death rates per 100,000 for consecutive five-year periods from 1910 to 1945 are as follows: 6.7, 4.8, 4.6, 3.5, 3.4, 2.5, 1.7. The average yearly death rates for rheumatic fever in the city of New York, for consecutive five-year periods from 1900 to 1945 are as follows: 8.2, 9.1, 6.2, 4.3, 3.8, 4.6, 3.6, 2.1, 1.3.

Typhoid Fever

The mortality rates from typhoid and paratyphoid fever have also steadily declined since before the turn of the century. The modern trend of this disease is shown by the average yearly death rates per 100,000, for consecutive ten-year periods, from 1885 to 1945, in the cities of Toronto, Montreal and New York, which are respectively as follows: 54.4, 32.3, 22.1; 19.8, 28.7, 17.7; 19.2, 29.9, 11.0; 2.8, 12.0, 2.9; 0.7, 11.1, 1.1; 0.1, 1.3, 0.2. (Table 3).

TABLE 3

Ten year averages of annual death rates from typhoid and paratyphoid fever per 100,000, in Toronto and Montreal, Canada, and New York City

Decennia	*Toronto*	*Montreal*	*New York City*
1886-1895	54.4	32.3	22.1
1896-1905	19.8	28.7	17.7
1906-1915	19.2	29.9	11.0
1916-1925	2.8	12.0	2.9
1926-1935	0.7	11.1	1.1
1936-1945	0.1	1.3	0.2

The case-fatality rate of this disease has also markedly declined, from about 20 percent prior to 1900 to about 5 percent at the present time.

Erysipelas

The mortality rates for erysipelas have steadily declined since 1880. The average yearly death rates per 100,000 for this disease, for consecutive five-year periods from 1880 to 1945, in the city of Montreal, are as follows: 12.0, 9.6, 6.3, 6.5, 5.2, 5.2, 5.0, 4.1, 3.1, 4.2, 3.5, 1.6, 0.5. A similar decline for this disease has been recorded in other large cities of Canada and the United States.

Puerperal Disease

Maternal deaths have been on the decline in Canada since 1921, beyond which time the records are incomplete. The death rates for puerperal disease in all nine Provinces of Canada in this 25-year period indicate an average decline from a rate of approximately 5.3 in 1921 to 2.3 in 1945. (Table 4). A very similar trend has been in evidence in the United States.

Infant Mortality

Infant mortality, under one year, has shown a steady reduction in Canada and United States

TABLE 2

Five year averages of annual death rates from infectious diseases—white children ages 1 to 14 years, Metropolitan Life Ins. Co., Industrial Department, 1911 to 1945

Cause of Death	Average Death Rates per 100,000							Percent Change 1941-1945 Since 1911-1915
	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911 1915	
Measles	1.9	2.7	6.2	11.3	14.0	23.9	26.8	—92.9
Scarlet Fever	1.1	3.5	7.8	7.4	12.8	12.6	28.5	—96.0
Whooping Cough	1.5	2.5	4.5	8.1	9.7	16.8	15.9	—90.3
Diphtheria	2.5	4.7	8.9	24.1	45.9	61.2	75.1	—96.6
Tuberculosis—all forms	4.7	6.1	9.9	16.0	20.9	36.5	46.6	—89.2
Acute Poliomyelitis	1.8	1.3	2.9	2.6	2.9	9.8	3.8	—52.2
Acute Rheumatic Fever	1.7	2.5	3.4	3.5	4.6	4.8	6.6	—74.3
Pneumonia-Influenza	14.3	27.1	40.8	59.4	64.3	151.1	85.7	—83.3
Diarrhea and Enteritis	3.1	5.4	9.6	19.2	27.6	49.2	60.9	—94.8
Appendicitis	5.1	9.4	11.5	11.9	11.3	9.8	10.0	—49.6

since the beginning of the century. The death rates, under one year, per thousand living births, in the city of Montreal, based on the yearly average of consecutive five-year periods from 1900 to 1945, are as follows: 274.7, 268.6, 220.2, 183.0, 160.6, 126.8, 105.9, 83.0, 64.5, 61.2 (1945 alone). The infant death rates in other large American cities show a very similar trend.

Discussion

From a cursory examination of the above data it is quite obvious that there has been a general decline in mortality from practically all the common infectious diseases both before and since the beginning of the present century. There are doubtless a number of factors which may have contributed to this regression,—better nutrition and hygiene, particularly in the younger age groups, improved medical therapy, artificial immunization, and public-health measures such as quarantine, pasteurization of milk, chlorination and filtration of municipal water supplies, etc.

Regarding tuberculosis: the advent of sanitarium treatment, with the segregation of a considerable number of active cases, and the more recent mass x-ray surveys for the early detection of otherwise unrecognized cases, have saved and will save many fatalities from this disease. The fact remains, however, that this disease was definitely on the decline in both Europe and America long before any of these control measures were instituted, indeed even long before Koch's discovery of the specific etiological organism in 1882. Furthermore, the rate of mortality decline was practically as rapid before as since the adoption of these controls. Commenting on this orderly decline, Ross (2) says: "While the control measures which have been applied have possibly accentuated the decline in young adult life and influenced through public-health education all age groups, it seems reasonable to attribute the general decline to other factors, more general in character and of which but little is really known." In support of this statement Ross compares the tuberculosis mortality figures of Mexico City with those of Ontario, showing that the decline in the former has been more rapid than in the latter, in spite of the fact that "Mexico City had no sanatoria, no diagnostic clinics, no anti-tuberculosis movement."

On this same subject McKinnon (3) says: "Quite obviously, then, all the factors mentioned are not adequate in themselves to explain the recorded decline. Some other factor or factors must have been operating during this period and it is necessary to cast farther afield in search of them."

Regarding the general decline in tuberculosis mortality Davis (4) says: "Is it that we are effecting more cures? Yes, we are effecting more apparently arrested cases, . . . Do you think that alone accounts for the drop in the death rate? Without hesitating the answer is no—the figures are nowhere near commensurate. Can it be due to our methods of diagnosis? To some extent—yes. Does this account alone for the drop in the death rate? Again the answer is no. Can it be that we have developed more resistance to the disease? Yes, it could be, . . ."

In the epidemiological history of diphtheria we have a somewhat similar picture to that of tuberculosis. The decline in mortality was well under way long before the end of the last century, and has continued on an almost even grade until, during the last decade, it has approached the vanishing point. At the beginning of the century anti-toxin came into general use, and later (1930) artificial immunization by toxoid was adopted by the health departments of many of our large urban centers. By reference to the accompanying charts of the case rates of diphtheria in New York City and Toronto, Canada, the general decline in incidence is shown with an apparent accentuation of same following the introduction of toxoid immunization in these cities, which began in New York in 1925 and in Toronto in 1930. These graphs show one marked up-surge in New York shortly following the adoption of toxoiding which corresponds in timing with a similar upward fluctuation in Toronto before toxoiding was begun. In fact the deviations from the calculated base line of incidence in both cities, all through the 40-year period, show a striking parallel. From 1930 to 1940 the decline has been apparently more free from upward fluctuations in both cities, and this has been cited as evidence of the effect of immunization; but, from present indications, when the graph is completed to date, a disturbing upward fluctuation will be noted within the last few years. In a number of centers in the United States and Canada serious outbreaks of diphtheria have recently been reported, to say nothing of the major up-surge in Europe. In the United States as a whole there was approximately a 30 percent increase in incidence in 1945. In upstate New York, Baltimore, Halifax, N. S. and Ottawa, Ont., outbreaks of epidemic proportion have been reported. A disquieting feature of these outbreaks has been the development

TABLE 4
Five-year averages of annual maternal death rates, puerperal causes, in Canada, by Provinces, per 1000 live births.

Years	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1921-1925	4.5	5.8	5.0	3.9	5.4	5.3	5.9	6.2	6.0
1926-1930	4.7	5.5	6.2	5.2	5.8	5.6	5.9	6.6	6.1
1931-1935	5.3	5.1	5.4	5.1	5.3	4.3	4.5	4.5	5.3
1936-1940	4.8	4.0	4.9	5.1	4.5	5.0	3.6	4.5	3.8
1941-1945	3.9	2.7	3.2	3.3	2.5	2.6	2.8	2.4	2.6
1945 alone	2.7	1.5	1.8	2.4	2.2	1.9	2.4	2.3	2.7

of a considerable number of cases in supposedly immunized subjects, and the marked invasion of adult age groups. In the Halifax epidemic (5), 66 of the cases admitted to hospitals had previously received one or more doses of toxoid or antitoxin or were Schick negative. Fifteen cases developed in persons supposedly immune by Schick test. Of these, 9 cases developed in less than three months from the time the test was made, while the remaining 6 had been negative a year or more previously. Five cases had received antitoxin within two months previously. In the Ottawa epidemic (6), of 99 cases under fifteen years of age, 36 were found to have previously received three doses of toxoid. One of 25 cases in adults had been toxoided in the army. In the Baltimore outbreak of 1944 (7), 63 percent of all cases had a record or history of prior toxoid inoculation. Of the fatal and malignant ("Bull-neck") cases 77.8 percent, and 61.8 percent of the remaining milder cases had previously been toxoided. Since the number of the pre-school and school-age children of Baltimore who had been toxoided was estimated at 75 percent, the ratio of incidence in the toxoided and non-toxoided groups was about even, with the malignant cases showing a selectivity for the toxoided group. Commenting on these findings the authors of the report say: "This may be a reflection of the increasing amount of inoculation being done in Baltimore, but it is by no means certain that this is the only factor involved".

Thus it would appear that, with the exception of the recent post-war increase in Europe and America, the decline in diphtheria mortality has generally followed a rather even course during the past sixty years or more, with up and down fluctuations prior and subsequent to the adoption of artificial immunization. The protective efficacy of the latter seems to be adversely reflected in the reports of the Halifax, Ottawa and Baltimore epidemics of the last few years. The present trend in this as in other infectious diseases seems to be toward a shift in age incidence from the younger to older age groups.

Regarding pneumonia, it will be seen by the statistical data previously presented that the decreased mortality has followed a fairly even grade, with the exception of the 1920 up-surge which was incidental to the post-war influenza pandemic. The decline was almost as rapid prior to as following the introduction of chemotherapy, which has been the only factor likely to have materially influenced the epidemiology of this disease.

Regarding typhoid fever, this enteric infectious disease, which has generally been thought to be propagated by pollution of drinking water or milk, has been on a steady decline in mortality since 1885. No one can question the favourable influence of water chlorination and milk pasteurization on the incidence of this disease; but, strange to say, the decline in mortality and case-fatality rates had begun long before the adoption of either of these control measures. This would seem to indicate, as with the diseases previously discussed, the operation of some major unidentified prophylactic factor.

Regarding the other infectious diseases listed—scarlet fever, whooping cough, rheumatic fever and erysipelas—these, as shown in the previous statistical data, have all exhibited a steady decline in mortality and case-fatality rates since before the turn of the century, although no specific control measures have been generally applicable. In recent years, however, artificial immunization for scarlet fever and whooping cough has been given a limited trial.

Regarding maternal and infant mortality (under one year): these, as previously indicated, have also shown a steady decline in keeping with that of the infectious diseases, although no specific control measures have been applicable, thus indicating the possible influence of the same unidentified prophylactic factor.

The Author's Hypothesis

From the foregoing it is clearly apparent that some unidentified major prophylactic factor or factors, general in application, must have been operating in bringing about such a uniformity in reduced mortality from so many infectious diseases in the same period of time. The fact that the decline has followed practically the same pattern in diseases such as scarlet fever, rheumatic fever, whooping cough, measles, erysipelas, diarrhea and enteritis, and even appendicitis (Table 2), in which no specific control measures have been applicable as in tuberculosis and diphtheria, points significantly to the over-all nature of the prophylaxis. The most logical explanation would seem to be that resistance to infection in general has been increased gradually throughout the past century, particularly in the younger age groups, and that the major factor in producing this result is most likely to have been some changed trend in nutrition. On this basis, artificial control measures, which have been applied mostly within the last two decades, have played a minor or supplemental role.

The major change in nutrition in this period has been brought about by the tremendous increase in the production, distribution and consumption of citrus and other vitamin-C containing fruits in North America and most of Europe, made possible by the gradual development of better transportation throughout the century—steamships, railways, and motor highways. Prior to 100 years ago, ocean transport by sailing ships and lack of refrigeration made practically impossible the import by the United Kingdom of citrus and other fresh fruits from Mediterranean ports or North Africa. With the advent of steamships and railways, imports of these fruits to England and other Northern European countries gradually increased from Spain, Algiers and the Middle East. The citrus fruit industry began in America in 1886, at which time the annual U. S. production amounted to nearly 3,361,000 bushels. The production has gradually increased (more rapidly in the last two decades) until in 1944 the total amounted to 278,369,600 bushels. The production of canned citrus juices began in U.S.A. in 1929, in which year the total pack was 6,150,000 lbs.

By 1945 the annual output had reached a total of 1,738,170,000 lbs. The production of canned tomato juice began in U.S.A. in 1930, in which year the total pack was 6,930,000 lbs. By 1945 the annual output of this juice, second only to citrus in vitamin-C content, had reached a total of 924,000,000 lbs. The production and consumption of fresh and canned tomatoes, in ever increasing quantity, has now become general throughout the Americas and most of Europe. One hundred years ago the tomato, or love-apple as it was then called, was thought to be unfit for food and the cause of cancer. It was then grown for ornamental purposes only. Today the use of these fruits and juices has become routine as an essential part of modern nutrition, and significantly the decline in mortality rates of the infectious diseases dealt with in this treatise has been closely proportionate to the increased use of these fruits and juices. Significant also may be the fact that the inception of the citrus and tomato juice canning industry (1929-1930), which has greatly increased the consumption of these fruits, closely coincides with an apparent acceleration in the mortality decline of most of these diseases.

This nutritional revolution has, perhaps, been applied more intensively in infancy and childhood than in the older age brackets. Fifty years ago infants, when not breast fed, were fed artificially on modified cows' milk, condensed milk, or proprietary foods in powder form, which frequently was conducive to malnutrition. Even breast feeding at that time, owing to impoverished maternal diets, often had to be abandoned. Pediatricians at that time sanctioned the use of orange juice in small quantity —½ to 1 oz. after the age of ten months. Many mothers, however, hesitated to use fruit juices of any kind in the feeding of infants and young children because of the then popular fear of its producing "colic". Infant feeding today presents a greatly different picture. The infant of one month now gets its full ounce or more of orange juice daily, which is gradually increased until at six months fully four ounces or more is given, besides supplemental feedings of homogenized fruits and vegetables, wheat-germ-enriched cereal foods, etc. If orange juice should disagree, vitamin-C in tablet form is substituted.

The author believes that the major factor in the protective influence of this dietary revolution, with regard to the prevention of infectious diseases, has been the greatly increased intake of vitamin-C, which has been referred to by nutritionists as the "anti-toxic" or "anti-infection" vitamin. The anti-infection properties of this vitamin are dependent upon its effect on the reticulo-endothelial system in building up and maintaining stability and invulnerability of the submucous and subcutaneous connective tissues. The proliferation of fibroblasts and collagen fibrils is dependent upon a normal plasma concentration of vitamin-C, thus maintaining the stability of the intercellular cement substance, which in turn is essential to optimal resistance to infectious invasion. By reason of its chemical action as a reducing agent, and sometimes as an oxidizing agent, vitamin-C is also a specific antagonist of chemical and bacterial toxins. An optimal intake of this vitamin is, therefore, a means of building up natural immunity or resistance against all infectious diseases as well as counteracting their toxic manifestations.

The following references to the literature pertaining to the anti-infectious action of vitamin-C are submitted to show the prophylactic and therapeutic effect of this vitamin in the diseases under discussion:

Regarding tuberculosis: Richard Morton, one of the earliest writers on this disease, states in his famous *"Phthisiologia"* (1689) that "scurvy is wont to occasion a consumption of the lungs". Many investigators have studied the effect of vitamin-C in this disease because of its favourable effect on fibroblastic connective tissue formation, so essential to the healing of the exuditive or ulcerative lesions. Harris (8), finds that the excretion of vitamin-C is decreased in tuberculosis, that deficiency of vitamin-C reduces the resistance of guinea-pigs to tuberculosis infection, and that similar effects have been observed in man. Birkhang (9), found that C-hypervitaminosis, induced by daily administration of ascorbic acid, produced an increase in body weight and reduction in the tuberculosis lesions of guinea pigs. Microscopic examination revealed less caseonecrotic lesions and more collagenous tissue in and around the tubercular centers than was observed in the controls. Bauer and Vorwerk (10), report vitamin-C deficiencies of from 1000 mg. to 4000 mg. in tuberculosis cases. They state that there appears to be a certain parallelism between the activity of tuberculosis and the extent of vitamin-C deficiency. Albrecht (11), found that daily subcutaneous injections of vitamin-C in tubercular patients increased appetite, improved general health and blood picture, and frequently decreased the temperature. He also found it to be of value in pneumothorax therapy. Pilz (12), finds that vitamin-C favourably influences the process of recovery in tuberculosis. It increases vitality, eliminates night sweats, improves appetite, and, combined with calcium, raises blood values. A daily dose of 300 mg. is given until deficiency is made up, and thereafter sufficient to maintain normal levels. Nicita (13), reports that tubercular patients show a diminished vitamin-C urinary content, which is proportional to the severity of the disease. He advocates the administration of large amounts of this vitamin to counteract toxemia. Boissevain and Spillane (14), found that vitamin-C, in concentration of .001 percent inhibits the growth of human tubercle bacilli in artificial media. Radford, de Savitsch and Sweany (15), report the effect of vitamin-C on 111 far-advanced and fibroid tubercular cases. The patients were divided into three groups: the first received 500 cc. of orange juice, and the second 250 mg. of synthetic vitamin-C daily. The third group, used as controls, were given imitation orange juice. No other therapy was employed except routine rest. In three months the greater percentage of the treated patients showed a more favourable response than

the controls in red-blood-cell count, lymphocytes, monocyte-lymphocyte ratio, neutrophil-lymphocyte ratio, hemoglobin and albumin-globulin. At six months the treated group still showed greater improvement in blood cells and hemoglobin. At nine months the greater amelioration of the treated groups in respect to blood-cell counts, sedimentation rates, and blood fibrogen was still maintained. Hasselbach (16), found a close relationship between fever and vitamin-C intake, and cites clinical cases to show that vitamin C reduces toxic manifestations, including fever. McConkey (17), reports that of 437 pulmonary cases admitted to a New York State Hospital for tuberculosis in 1926 and 1927, 47 developed intestinal tuberculosis; whereas, of 399 admitted in 1928 and 1929, who received a prophylactic treatment consisting of 3 oz. of citrus or tomato juice and ½ oz. of cod-liver oil with each meal, only three developed intestinal tuberculosis. Furthermore, of 913 other patients admitted during 1930 to 1938, who received the same prophylactic treatment, only nine developed intestinal tuberculosis. Borsalino (18), reports a study of the capillary resistance of 140 tubercular patients. He found that administration of vitamin-C rapidly increased capillary resistance and stopped hemoptysis, which reappeared when the treatment was discontinued. Moore *et al* (19), in a recent survey of nutrition among the northern Manitoba Indians, report a very high mortality rate from tuberculosis and pneumonia (761 and 383, respectively, per 100,000) among the Indians of Canada. In the tribes covered by their study the death rate for tuberculosis in 1942 was 1400 per 100,000. (The comparable figure for the white population of Manitoba was 27.) In their analysis of the daily per-capita food intake they found vitamin-C to be in greatest deficiency—less than 1/71 of the recommended allowance. In conclusion they say: "It is not unlikely that many characteristics, such as shiftlessness, indolence, improvidence and inertia, so long regarded as inherent or hereditary traits in the Indian race, may, at the root, be really the manifestations of malnutrition. Furthermore, it is probable that the Indians' great susceptibility to many diseases, paramount amongst which is tuberculosis, may be attributable among other causes to their high degree of malnutrition arising from lack of proper foods."

Regarding vitamin-C in pneumonia: In 1936 Gander and Niederberger (20), found that vitamin-C favourably influenced the course of pneumonia. When the vitamin-C status was brought up to normal saturation level early in the disease, preferably the first day of illness, the temperature dropped abruptly to normal and the pain subsided. The pulse remained in good tone and remarkable improvement in general condition was noted. They were led to the clinical study by the observation that the seasonal incidence of the peaks of vitamin-C deficiency (December and April) corresponded with the periods of highest mortality from pneumonia. Furthermore, they correlated the age incidence of the disease with the degree of vitamin-C deficiency usually found at different ages, the greatest deficiency occurring in age groups above fifty years in which pneumonia also has its highest incidence. In the same year Hochwald (21), independently reported similar results, his findings indicating that massive doses of vitamin-C—500 mg. every 90 minutes until the temperature drops to normal—exerted a curative effect in croupous pneumonia as shown by improvement in general condition—lessened prostration and dyspnea, earlier return to normal temperature, quicker disappearance of local findings, and normalization in white-blood-cell picture. More recently Slotkin and Fletcher (22), have reported on the prophylactic and therapeutic value of vitamin-C in postoperative pneumonia. They summarize their findings as follows: "Pulmonary complications in old debilitated patients, requiring prostatic surgery, is a common cause of death. The pulmonary lesions most noted were bronchopneumonia, lung abscess and purulent bronchitis. Most of these cases are so-called "wet chests", due to capillary secretions. Ascorbic acid, which increases the tonicity of these capillaries, has been of great value in alleviating these patients and restoring prompt pulmonary action by disappearance of this infiltration. . . . It is a valuable adjunct in tiding these aged patients over their critical postoperative period." Slotkin further reports (23), that since publication of his original paper on this subject, "ascorbic acid has been used routinely by the general surgeons in all surgical procedures in the hospital (Millard Fillmore-Buffalo) as a prophylaxis against pneumonia with complete disappearance of this complication." In this connection it may be of interest to note that bronchopneumonia is often the terminal cause of death in frank scurvy, and that the "rusty-brown" sputum of pneumonia may in reality be a sign of the hemorrhagic status of a sub-clinical scorbutic background.

Regarding vitamin-C in diphtheria: In the early history of this disease, when it was known as malignant angina or gangrenous sore-throat, many observers reported the frequent concurrence of "gangrenous gingivitis". Some physicians at that time regarded this complication as an extension of the disease from the throat. Others regarded this severe form of gingivitis as evidence of a scorbutic background. Boerhaave, a Dutch physician of international repute in the early 18th century, held strongly to this viewpoint. The quite frequent occurrence of epistaxis and the profuse bleeding from the denuded fauces upon removal of the false membrane, so characteristic of diphtheria, are very suggestive of the hemorrhagic status of scurvy. One thing is certain, scurvy was at that time very prevalent in central and northern Europe, where the available supply of fresh fruits was much less than in countries bordering on the Mediterranean. The basic concurrence of this condition may have determined the very high case-fatality rate (80 percent) at that time.

The close relationship between the vitamin-C status and the degree of diphtheritic intoxication is

shown by Ravina (24), who observes that guinea-pigs have greater resistance to diphtheria toxin after injections of vitamin-C than controls not so treated. In 25 benign, 10 severe and 4 malignant cases of the disease a marked deficiency of vitamin-C was found in 28 percent of the subjects under fifteen years of age, and in 52 percent of those over fifteen years of age. For effective therapy he recommends large daily doses of the vitamin—150 mg. for children under three years of age, and 500 mg. for adolescents and adults. In Russia Bagasheva (25), uses a combined therapy for diphtheria, consisting of anti-serum, hypertonic dextrose, nicotinic acid and vitamin-C.

Regarding vitamin-C in rheumatic fever: Abasy, Hill and Harris (26), found a striking difference in the excretion of vitamin-C in 107 active rheumatic fever cases compared with controls. They conclude that large amounts of this vitamin are indicated both therapeutically and prophylactically. Roff and Glazebrook (27), reported the occurrence among naval trainees of a gingivo-stomatitis, commonly associated with rheumatic fever, which was shown to be due to vitamin-C deficiency. Glazebrook and Thomson (28), studied the effects of hemolytic streptococcus infection in potentially scorbutic and control groups in 1500 youths in a naval training school. Of these 335 were given liberal daily supplements of ascorbic acid, the remainder being used as controls. There developed 16 cases of rheumatic fever and 17 cases of pneumonia among the controls, and no case of either disease among the youths who received the extra vitamin-C. These authors felt that there was a close relationship between the cases of pneumonia and rheumatic fever. They noted the occurrence of a low-grade basal lung consolidation which was characterized on the one hand by its tendency to progress into rheumatism, and on the other hand by its disappearance when treated with vitamin-C. Rinehart (29), studied the effect of vitamin-P, a plant pigment found in the peeling of lemons and oranges, in conjunction with vitamin-C in the treatment of rheumatic fever. It had been found that vitamin P had a favorable influence on purpuric and hemorrhagic conditions resulting from vascular permeability in infections, notably rheumatic. All his cases showed a slowing of the sedimentation rate which was paralleled by marked clinical improvement. He concludes: "If nutritional deficiency of vitamin-C and P prove to be conditioning factors which prepare the soil for rheumatic fever, the prophylactic implications are clear."

Regarding vitamin-C in whooping cough: In 1936 Otani (30), and in 1937 Ormerod *et al* (31 and 32), reported very favorable results in the vitamin-C therapy of this disease. The former reported on the intravenous vitamin-C treatment of 81 cases of whooping cough in hospital clinics, and concluded that vitamin-C has a definite antagonistic action on the toxin of the Bordet-Gengou bacillus. The latter reported on the oral vitamin-C therapy of 29 cases —500 mg. the first day, then a daily average of 200 mg. thereafter. They concluded that "this treatment markedly decreases the intensity, number and duration of the characteristic symptoms.

Regarding nutritional deficiency as the major etiological factor in maternal and infant mortality: The epochal work of Ebbs *et al* (33, 34, 35), has furnished indubitable evidence of the life-saving effect of improved maternal nutrition on both mother and child. They studied the effect of supplemental feeding of 90 women, on poor diets and with low income, in the last half of pregnancy, as compared with 120 controls, unsupplemented, on equally poor diets; and another group of 170 women with higher incomes who were advised regarding proper diet. The supplemental foods supplied in these studies consisted of milk, eggs, cheese, oranges, tomatoes, wheat germ and vitamin D. The women on the supplemented and good diets enjoyed better health, had fewer complications throughout the puerperium, and the health of their infants was much better than those on the unsupplemented poor diet. The incidence of miscarriages, prematures, stillbirths and deaths before six months was significantly higher in the poor-diet group. In a subsequent study by Burke *et al* (36), in which 216 maternal cases were observed, very similar findings are recorded.

It is the author's belief that the gradually increased use of citrus fruits and juices in maternal and infant feeding during the past half century has been the major factor in reducing the maternal and infant death rates. The increased intake of vitamin-C would, for the physiological reasons previously stated, tend to minimize puerperal infection, decrease the incidence and severity of pre- and post-partum hemorrhage (the *bête noire* of obstetrics,) and, by increasing the tensile strength of connective tissues, prevent cervical and perineal lacerations, thus still further lessening the danger of maternal infection. In the infant this dietary revolution would, for the same reasons, tend to reduce the incidence of neonatal pneumonia, diarrhea and enteritis (now taking such a heavy toll in war-ravaged Europe), and other infectious diseases of early infancy.

Regarding vitamin-C and resistance to infection in general: Jusatz (39), finds that vitamin-C has a stimulating effect on the production of antibodies. He claims that it increases the agglutinin, hemolysin and precipitin titres and the opsonic index of experimental animals treated with vaccines or toxoids. Madison and Manwaring (40), confirming these findings, were able to bring about a ten-to-thirty-fold increase in precipitin titre by optimal intake of vitamin-C. During the recent war it was found that German children receiving a supplement of 50 mg. of vitamin-C daily were less susceptible to infection than controls (41). More recently Nungster and Ames, of the University of Michigan, reported to the American Society of Bacteriologists (1947 Convention) that vitamin-C greatly increases the phagocytic action of white blood cells against infectious bacteria.

The author's hypothesis of increased vitamin-C intake associated with the increased consumption of

citrus fruits, tomatoes, etc., as being the major heretofore unidentified factor in bringing about the general reduction in mortality of infectious diseases, would also account for the shift in the age incidence of tuberculosis, diphtheria, poliomyelitis and other diseases from the under-five-years to older age groups. This is explained by the fact that the infant in the nursery is given the full benefit of this nutritional reform, whereas after this age perverse dietary habits are gradually acquired through lack of parental guidance and inadequacy of public-health education. The increased use of candy, carbonated beverages, tea, coffee, tobacco and alcohol by our juvenile and older age groups tends gradually to displace the more wholesome nutritional habits of early childhood.

After all, we should recognize that natural resistance to disease is developed by fundamental improvement in nutrition and hygiene. Such resistance gives protection against all diseases. Artificial immunization, on the other hand, is dependent upon the conversion of a portion of this latent general resistance to a specific resistance, such as in toxoiding for diphtheria. The injection of an attenuated virus or bacterial toxin elicits a reaction of the organism to that specific morbific agent only, and draws upon our reserves of natural immunity to meet this conversion demand. If repeated demands exceed the supply we are left physically bankrupt. In other words, we cannot strike back with more than we have, and we cannot get out of anything more than we put into it. Thus the fundamental prerequisite for successful artificial immunization is an ample reserve of natural immunity. In our search for short cuts in the prevention and cure of disease we are prone to overlook this basic truth. In the modern use of chemotherapy we are already beginning to find "flies in the ointment". The specific benefit of the sulfonamides is sometimes obtained at the expense of toxic damage to some vital uninvolved part of the human mechanism. (In a previous paper (37), the author has shown that vitamin-C deficiency is conducive to sulfonamide sensitivity.) We are now beginning to find that even the more benign penicillin has its drawbacks in stepping up the virulence of certain organisms. The author is inclined to believe that the principle of trying to eradicate disease by concentrating our attack against the associated micro-organisms is fundamentally unsound. If we wish to eliminate a desert or swamp we do not proceed to cut down the sage brush and cactus of the former, or the lush characteristic verdure of the latter. Instead, we change the condition of the soil. By irrigation we make the desert blossom like a rose, and by drainage we eliminate the swamp.

Dr. Alexis Carrel (38), has said: "Microbes and viruses are to be found everywhere, in the air, in water, in our food. . . . Nevertheless, in many people they remain inoffensive. Among human beings some are subject to diseases and others are immune. Such a state of resistance is due to the individual constitution of the tissues and the humors, which oppose the penetration of pathogenic agents or destroy them when they have invaded our body. This is natural immunity. . . . But natural immunity does not exclusively derive from our ancestral constitution. It may come also from the mode of life and alimentation. . . . Some diets increase the susceptibility of mice to experimental typhoid fever. The frequency of pneumonia may also be modified by food. The mice belonging to one of the strains kept in the mousery of the Rockefeller Institute died of pneumonia in the proportion of 52 percent while subjected to the standard diet. Several groups of these animals were given different diets. The mortality from pneumonia fell to 32 percent, 14 percent, and even to zero, according to the food. We should ascertain whether natural resistance to infections could be conferred on man by definite conditions of life. Injections of specific vaccine or serum for each disease, repeated medical examinations of the whole population, construction of gigantic hospitals, are expensive and not very effective means of preventing diseases and of developing a nation's health. Good health should be natural."

A great English physician, Dr. Leonard Williams, has said: "The discovery of the vitamins has entirely altered our conception of the causes and origins of disease. Until lately disease was regarded as a sin of commission by some unseen and subtle agency. The vitamins are teaching us to regard it, in some degree at any rate, as a sin of omission on the part of civilized or hypercivilized man. By our habit of riveting our attention on microbes and their toxines we have sadly neglected the side of the question which concerns itself with our own bodily defenses."

Charcot has said: "Disease is from of old and nothing about it has changed. It is we who change as we learn to recognize what was formerly imperceptible."

Summary

Statistical data are presented to show the marked decline in mortality and case fatality of many infectious diseases within the past century.

The uniformity of this decline, in so many diseases and over such a lengthy period of time, suggests the operation of some major over-all factor improving natural resistance, compared with which our artificial control measures have played a minor or supplemental role. The existence of such a factor has been recognized by epidemiologists, but not yet identified.

The author advances the hypothesis that some major change in the trend of nutrition offers the most likely explanation, and singles out the greatly increased consumption of citrus and other fruits rich in vitamin-C as the unidentified factor. Correlated statistical data show a close parallel, in both time and extent, between the development of this nutritional trend and the mortality decline in infectious diseases.

The physiological action of vitamin-C is discussed in relation to its "anti-infection" role, and the literature relative to the prophylactic and therapeutic use of this vitamin in infectious diseases is reviewed.

(*Turn to page* 560)

THE PROBLEM OF ANGINA PECTORIS

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Discussing the pathogenesis of angina pectoris F. Tice (1) states: "At present there is no unanimity of opinion as to the manner of production of the attacks. Many theories have been promulgated. Any attempt to harmonize or conciliate those many and varied theories is simply impossible and nothing short of futile. In a careful study of the pathogenesis of this syndrome no single theory or hypothesis is satisfactory and applicable to all cases."

If no single theory is satisfactory and applicable to all cases, there must be something wrong in each of them. The best way to find out what is wrong is to search for paradoxical facts. Since facts cannot be fallacious, the doxa or theory must be incorrect in that element in which the theory is inconsistent with the facts. This method will be used here and it may well be that it will bring the problem of angina pectoris nearer to a solution.

The evidence against the most widely accepted theory of the present time, namely, the theory of myocardial anoxemia, can be grouped in three classes: clinical, physiological, and pathological evidence.

I. a. The anginal attack. Observation of an attack shows that its victim, whether on the street, at home, or in bed, brings breathing sharply to a halt. Standing or sitting bolt upright, he holds the thoracic cage fixed in an inspiratory position so that any further respiratory movement is checked. Despite his pain he even avoids emitting a groan, which would alter this self-chosen inspiratory posture. In so doing he puts an enormous additional strain on all muscles serving inspiration; furthermore he prevents ventilation; in addition he lowers the output of the left ventricle by holding up the blood in the lengthened and widened vessels of the lungs (2) and he lowers the systemic pressure (3) thereby reducing the coronary flow; moreover, he accelerates the heart by nearly all means known to physiology (4) and thereby increases myocardial oxygen consumption on the one hand, while decreasing stroke volume, (5) output per minute, systemic pressure and coronary flow on the other. In short, he does everything in his power to increase the myocardial anoxemia. No theory can be considered valid unless it is able to explain this paradoxical behavior.

As emphasized by Wenckebach there is no dyspnea during the attack, no cardiac disturbance nor evidence of heart failure. If these conditions arise, as they sometimes do, they are the effect, not the cause of the attack.

I. b. Conditions favoring or disfavoring the occurrence of attacks.

1. Angina pectoris rarely occurs in dilated failing hearts. Disappearance of the decompensation favors the recurrence of anginal attacks.

2. The frequent occurrence of angina pectoris in aortic regurgitation is generally explained by the low diastolic pressure. However, the greater the reflux and the lower the diastolic pressure in the arteries, the greater must be the influx into, and the diastolic pressure in, the supravalvular portion of the aorta and in its extensions, the coronaries as well as the left ventricle. Even in normal hearts with normal pressure there is a slight backward flow in the aorta during diastole, which helps to close the semilunar valves. In these hearts the coronary pressure keeps on rising in the first half of diastole although the aortic pressure is falling. (6) How much stronger and longer must this effect be in the case of a violent and massive regurgitant stream!

3. According to the theory, primary hypertension ought to disfavor the occurrence of attacks because a high mean pressure improves the coronary flow. Actually, it favors it.

4. In those diseases in which, on the basis of the anoxemia theory, angina pectoris should be expected very frequently, namely, in the anemias, its occurrence is very rare. No mention of angina pectoris is found in the survey of the various diseases associated with pernicious anemia, made by Wilkinson and others. (7) According to Hochrein and Matthes, (8) angina pectoris occurs only in anemias of moderate degree and not in the severe forms; usually the stenocardia becomes worse when the anemia improves, or it then occurs for the first time; no characteristic electrocardiographic signs were found in severe anemias, in which subsequent autopsy revealed fatty degeneration of the heart indicating a high degree of myocardial anoxemia.

II. Three types of physiological anoxia are recognized: the anoxic type, where the tension of oxygen in the arterial blood is lower than normal; the anemic type, where the quantity of functioning hemoglobin is too small; the stagnant type, where blood is supplied to the tissues in insufficient amounts.

The organism efficiently counteracts and compensates any deviation from normal oxygen supply. It achieves this end in the first and second type by increasing the output per minute and the heart rate. In the third type, where the blood circulates more slowly, there is more time

available for reduction of hemoglobin. Furthermore, the impaired circulation causes CO_2 accumulation in the tissues, which facilitates the giving off of oxygen, while the accumulation of metabolites dilates the capillaries. This combination of factors results in an oxygen supply to the tissues which is twice as much as that found under normal conditions or in the other anoxic types. (9) It finds its expression in the raised basal metabolic rate of decompensation. This makes it clear that anoxia does not necessarily mean an actual oxygen deficit or oxygen lack of the cells though the name seemingly implies such lack. Even in cyanosis there may be none. Cyanosis means that there is a certain absolute amount of reduced hemoglobin in the blood. Such reduction is for the very purpose of correcting the deficiency, of making it, if possible, equal to the demand, i. e., compensating for it. A partly or wholly incompensable oxygen lack leads inevitably to degeneration or necrosis, respectively; its immediate effect is, as perfusion experiments have shown, feebleness and irregularity of the heart beat.

How efficient this compensation mechanism is can be seen from the following facts. It is an old lay experience that healthy persons at high altitudes do not show the slightest symptoms of an oxygen lack. This fact received scientific confirmation by the experiments of Tigges, (10) in which anoxia was produced by inhalation of gas mixtures containing as little as eight percent oxygen. Electrocardiography showed in all cases a flattening of the T wave. All subjects had tachycardia, which persisted until the first signs of loss of consciousness became manifest. There was, however, never a complaint about a sensation of uneasiness in the region of the heart during the experiments, nor had the subjects of such experiments any sense of the degree of the prevailing anoxemia. The explanation of this fact can be found in the result of Anrep's (11) experiments, which show that a fall to 50 percent in the oxygen saturation of the arterial blood may increase the coronary flow four- to five-fold. In harmony with it is the statement of Dietrich (12): "During the breathing of a mixture of 9 percent oxygen and 91 percent nitrogen the coronary flow increases from 36 cc. per minute to 45 cc. per minute." An analogous increase takes place when the anemic type of anoxemia is experimentally produced. (13) These experiments not only demonstrate the efficiency of the compensation mechanism, but they also disprove the conception that myocardial ischemia is the cause of angina pectoris.

The efficiency of the compensation mechanism is further illustrated by the following phenomena. The coronary blood flow may drop to one fourth of its previous amount without causing heart failure. (14) The output of the heart per minute may fall to one half of the normal volume and the output per beat from 77 cc. to about 15 cc., (15) whereas the oxygen consumption of the heart is greatly increased.

Since the anginal attack is brought on by such absolutely physiological factors as physical and mental strain, a heavy meal, cold, etc., it seems strange, even astonishing, that the organism does not set in motion a mechanism similar to that which proves so efficient in cases where the oxygen demand and the relative anoxemia are incomparably greater. The only possible explanation is that there must be some cause which prevents the mechanism from becoming effective.

III. Bruenn (16) has reported that during life cardiac pain was present in 23 percent of the cases showing coronary sclerosis. This means that it was absent in 77 percent and that the compensation mechanism was effective in 77 percent of these cases. The report tells further that cardiac pain occurred during life in the presence of *a few scattered plaques in the coronary arteries as well as when many were found. Additional stenosis did not increase the incidence.* In contrast to this finding referring to coronary disease is the incidence referring to rheumatic arteritis without involvement of the coronaries, i. e., 25 percent. Even if this report did not exist, the mere fact that anginal pain occurs in early adult life as well as in aortitis, aneurysm, adherent pericardium, mediastinal neoplasma, and stenosis of the isthmus with dilatation of the ascending aorta *without any pathology in the coronary vessels or in the heart* is sufficient to demonstrate the inapplicability of the theory of myocardial anoxemia in its present form.

Discussion

The anoxemia theory in its present form is based on the conception that a temporary higher demand for oxygen is inadequately satisfied by the actual supply, which would, however, be quite sufficient without that higher demand. This causes a relative myocardial anoxemia. The anoxemia leads to an accumulation of incompletely oxidized substances in the intercellular tissue spaces of the heart, which produce the pain. There can be no doubt that the second part of this theory is correct. Ample evidence proving this was given in the work of Lewis, Rothschild, and Pickering. Further there can be no doubt that the first part of the theory, i. e., that part which holds the coronary blood flow, alone and as a whole, responsible for the onset of a relative anoxemia, is incorrect. The old coronary insufficiency theory, which was the father of the modern anoxemia theory, tried to explain angina pectoris by the assumption of a coronary spasm supervening on the stenosis. This idea was soon giver up when it was found that a coronary spasm leads inevitably to heart failure and death. A deficit remains a deficit whether it is produced by a relatively too low supply or by a relatively too high demand. A general relative anoxemia of the myocard must in the same way, sooner or later, lead to death. This must happen

because the oxygen debt, if not compensated, is steadily growing and accumulating with every repeated demand, i. e., with every heart beat. The piling up of metabolites in the tissue spaces like that of unpaid bills can only end in failure. Unlike the skeletal muscle, the heart has no sufficient rest period which would allow repayment of the faster or slower increasing oxygen debt. A relative myocardial anoxemia cannot persist for some time without causing pathology: either it gradually becomes an absolute one (sudden death) or it is compensated in some way. If compensation is complete, there will be no more anoxia; if incomplete, myocardial degeneration is bound to develop in all places where compensation failed to materialize.

The foregoing analysis of the anoxemia theory leads to the negative conclusion that the capillary system of the coronaries cannot be the place from which the anoxia originates. Since there is only one other capillary system from which it may arise, namely, that of the vasa vasorum of the thoracic arteries, a limited part in this system must be the site of origin of the pain.

It can easily be seen that this theory is applicable to all cases. Any blocking of the circulation in this system, which by its anatomical situation in the adventitia and media is exposed to interference by various causes, will give rise to a local and complete anoxia. The smallest addition of an exciting cause to the predisposing cause (which may or may not be identical with the former) may be sufficient to transform an impaired circulation into a blocked one. The causes of impaired circulation may be: inflammation of the arterial wall with its effects, exudation and, later, fibrosis; compression by the viselike action of high diastolic pressure in the ventricle exerted from the one side and correspondingly high pressure in the coronary artery exerted from the other side; compression by a tumor; pressure on the adventitia no longer protected from it by intervening layers of elastic tissue (in aneurysm); a few plaques as well as many plaques in the coronaries, or spasm in the vasa vasorum (angina vaomotoria).

There was a time when nitroglycerin was not yet in general use. At that time the pathologist saw at autopsy, more often than nowadays, enormously hypertrophied hearts in young adults who had suffered from effort angina for years. These hearts had gone through many attacks without failing; they had repeatedly endured the overstrain which accompanies each attack; very often they came out of these attacks victoriously, but they paid heavily for such victories by developing the hypertrophy.* Why was this extra work undergone? What purpose did it serve? The advanced theory answers this question. This extra work, which so often saved their lives, was not done in vain. It lowered the blood pressure and, at the same time, it opened up the capillaries of the vasa vasorum by increasing the negative pressure in the thorax. It transformed a complete local anoxia back into a stagnant anoxia and thus rendered the compensation mechanism capable of functioning again.

According to this theory, angina pectoris is a dynamic pathological disturbance. The basic differences between angina pectoris and coronary occlusion (where the complete local anoxia actually arises in the coronary arteries) have their deeper ground in the difference of the site of the anoxia.

Summary

Critical examination and analysis of the anoxemia theory show that myocardial anoxemia cannot be held responsible for the production of pain in angina pectoris. This fact leads necessarily to the conclusion that the cause of anginal pain is the occurrence of a local complete anoxia in the wall of a thoracic artery, coronary as well as any other. The anoxia is caused by a complete arrest of circulation in the capillaries of the vasa vasorum supplying that particular area.

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* Pruenn and his associates report (l.c.) that "in the series with hypertrophy the hearts of patients with pain were consistently larger than those without it."

THE PHENOMENON OF INFLAMMATION

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The conditions into which the tissues enter as a reaction to injury are complex biochemical processes of which but little is known or understood. From certain observations obtained in the study of toxic inflammatory processes the result of bacterial and viral invasion, enlightening information has been obtained which increases the growing fund of knowledge on the complicated body reactive mechanisms concerned in the phenomenon of inflammation.

When pathogenic bacteria find fertile fields upon which to carry on their metabolic activities, they seek out as a source of energy certain specific tissue components susceptible to enzymic degradation; the resultant degradation products, as the amines, lactams, toxins, etc., being vitally concerned in putting into motion the phenomenon of inflammation. Each pathogenic agent is endowed with its own peculiar enzyme system to effect reproduction and growth, and through such interaction with susceptible tissue components, manufactures its own typical toxin the toxicity of which is responsible for the symptoms peculiar to each disease. Such toxins, as a rule, are not individual toxin molecules but aggregates of toxin aggregants. Among the more important amines resulting from bacterial enzymatic influences which cause increased permeability of blood vessels, congestion, stasis, febrile reactions, positive chemotaxis upon neutrophilic leukocytes, lowered pH of the blood, pus formation, necrosis, etc., are: putrescine from ornithine; cadaverine from lysine; pyocyanin and indoleethylamine from tryptophan; thioethylamine from cysteine; methylamine from glycine; ethylamine from alanine; tyramine from tyrosine; histamine from histidine; and many other amines and like compound agents from the decarboxylation of the aminoacids with splitting-off of CO_2. The released carbon dioxide often results in an acidemic state to increase blood-circulatory and respiratory movement through effect upon the respiratory center which is acutely sensitive to any change in the acid-base equilibrium. When the blood pH drops to 7.0 coma and heart block usually ensue. Such a state is noted in a severe gas-gangrene infection where the CO_2 and other gases resulting from protein dissociation are liberated in the infected areas, thereby accounting for the typical emphysematous gangrene of the affected tissues.

Many of the protein degradation products are positive chemotactic agents, i.e., they cause attraction of the neutrophilic cells to the affected areas. A leucocytosis is a constant reaction to pyogenic pathogens; its absence being of grave concern. The amines and other products of tissue degradation that accumulate in inflammatory processes, serve, on the other hand, to inhibit further bacterial enzymoses, and bacterial reproduction, thus explaining, in part at least, the crisis and recovery from the infectious processes. (The inhibition of the enzyme system of any pathogen results in early death of the agent.) Positive chemotaxis on the neutrophilic leucocyte can also be induced by other agents such as the nucleotides, nuclein, bone-marrow concentrates, and by various physicochemical means that produce inflammatory processes through protein disruption with the release into the tissues of pyogenic products. The neutrophile and not the lymphocyte is found as a response to the pyogenic bacteria since the lymphocyte is not a phagocyte cell.

It is still to be learned whether all the amines, either singly, or combined as are those found in the various inflammatory processes, will function as haptens to excite production of satisfactory protective antigens and qualitatively different circulating bodies. Preliminary data suggest, however, that the unbound amines, e.g. histamine, tyramine, etc., do not produce satisfactory immunizing agents and antibodies to themselves as do the amine-conjugates, i. e., the coupling of the amines to various inert protein. Histamine is peculiarly concerned in the phenomena of allergy and anaphylaxis. Probably in both conditions the enzyme, histaminase, which normally serves to inactivate free histamine in the system is, itself, inactivated through a binding effect of the allergen with this enzyme. The various amines may be obtained from protein by various physical and chemical means, and their employment in the production of more satisfactory immunizing agents, antibodies, etc., does not appear beyond ingenuity. In many infectious processes caused by such pathogens as the Streptococci, Staphylococci, gonococci and others, repeated infections are common and no ensuing immunity results; thus attempts to stimulate antibodies in such infections through passive introduction into the body of antigens would appear to be a futile gesture.

The lymphocyte, rather than the neutrophile is mainly responsible for the production of the immunizing agents and antibodies; these appearing to be couplings of various amines and toxins with certain specific components of body lipid material. The lymphocyte also functions to isolate bacteria, attacking their lipid constituents, disposing of foreign lipid material, and aiding in a walling-off process. Infiltration and accumulation of lymphocytes into the morbid areas is usually

indicative of the presence of alien lipid material resulting from enzymatic degradation, being correlated with the observation that the lymphocyte possesses a special lipolytic enzyme to dispose of abnormal lipid products. Such lipid material exerts positive chemotaxis upon the lymphocytes. Local collections of lymphocytes often accumulate in and about lesions caused by bacteria rich in lipid and waxy material, e.g., the tubercle and lepra bacilli. These pathogens are well-protected by waxy capsules, even surviving the effects of fifteen percent sulfuric acid which is lethal to all other bacteria. The lipolytic ferments of the lymphocytes appear capable of completely lysing such lipoid material, but often become inactivated by the accumulated cleavage products resulting from the morbid processes. An increased lymphocytosis, in both tuberculosis and leprosy, is a reliable criterion of satisfactory healing process. One should expect that more satisfactory healing of the lesions would occur by altering the blood-cell states here, i.e., inducing a lymphocytosis over a period of time, to effect satisfactory enzymic destruction of the intact cell lipid material, and a subsequently induced leucocytosis to facilitate phagocytosis of the now rendered susceptible bacteria. This, though, would have to be instituted in the early stages of the disease, before fibrosis, calcification, etc., have set in. Such a new method would probably also render more effective the antibiotic action of promin, promizole, streptomycin, etc., permitting their ready access and entrance into the disturbed bacterial cell.

A lymphocytosis can be induced by acetylcholine, epinephrine, pilocarpine, extracts of lymphocytes, lipids, nucleo-histones, and the like. (Lymphoid-tissue implants will produce a leukemia. One such type, lymphemia, appears to result from a lymphoid-dystrophy in which there is released into the tissues a lipid-degradation product, albukalin $C_8H_{16}N_2O_6$. The fatty substance, cholesterol, when dehydrogenated, becomes strongly carcinogenic. Disturbed in yet another manner it leads to a condition known as xanthomatosis.) A type of lipidystrophy with extreme lymphocytic infiltration into the affected parts appears as an etiologic factor in myasthenia gravis through the release into the tissues of a lipid cleavage product, stearonitrile $C_{18}H_{35}N$, isomeric with curarine. Acetylcholine therapy, in addition to producing a lymphocytosis, has also proven of benefit in increasing the blood supply to the gangrenous areas noted in leprosy, ergotism, diabetic necrosis, etc. The extracts of lymphatic glands and spleen, as well as the nucleohistones, in addition to inherent bactericidal properties, also restores body leucopenic states, and have proved of benefit in phthisiotherapy. The reported curative properties of chaulmoogra oil, chaulmoogric acid and like fatty acids in the treatment of leprosy may be the result of an induced lymphocytosis.

One notes that the usual children's diseases of viral origin are accompanied by a lymphocytosis, such infections probably having as a purpose the prevention of more-serious bacterial agents gaining a foothold in the system. One should be on guard though not to confuse facts susceptible of observation with hypothetical deductions based upon such observations. Many of the viruses show predilections for certain body lipid material which appears, in some manner, to cause their activation, and resultant disease. Lipid material is quite unstable, and in certain morbid and infectious processes, readily undergoes derangement with breakdown and release of toxic products.

Some of the latter are highly lytic (lysolecithins).* Others exert curarelike effects (botulinine, poliotoxin, encephalotoxin); and a third group cause selective tetanic effects upon the synapses to lower synaptic resistance and convert inhibition into active contraction (tetanotoxin, rabies-toxin, muscarine). In the affected nerve and brain tissues of poliomyelitis, tubercular and syphilitic meningitides, general paralysis, and tumors of the bulb and quadrigemina, a lymphocytosis is the salient feature. The morbid-tissue pathology is correlated with the abnormal lipid chemistry, and the release of toxic lipid-degradation products which further the lymphocytic infiltration and vascular occlusion. Disturbances in the oxidative and detoxifying processes arise, with acid-base dysequilibria, anoxia and tissue breakdown which eventually affect the dehydrogenase systems of the brain to result in lethargy, unconsciousness, delirium and psychoses. In a poliomyelitic infection, the neurotropic virus, on becoming activated in fertile fields, manifests itself in an enzymic degradation of specific lipid components of certain nerve cells (substrata) in the gray matter, apparently breaking down the host cell immunity to gain entrance into the nerve cell where it reproduces itself from interactions with specific cell components in a biocatalytic fashion. During this morbid process, certain lipid degradation products are released which act as positive chemotactic agents to cause collection and infiltration of lymphocytes into the perivascular spaces, even extending to and involving the white matter and the meninges. Nerve destruction then follows with neurophagia and total disappearance of the motor cells, fibrous gliosis, muscle atrophy, and a relative increase of connective tissue and fat. The poliotoxin, responsible for the systemic symptoms of the disease, could result from the interaction of the virus-enzyme with the substratum (the viral-activating cell components).**

* When certain choline-containing lipid compounds are caused to lose a fatty-acid group, highly lipid lytic agents result e.g., lysolecithin, lysosphyngomyelin, etc. Preliminary data tend to show that such a lipidystrophy is an initiating factor in hemolytic anemia. The lysolipins are capable of lysing cells mainly through their great affinity for water and other fluids which, upon entering the cells, cause swelling and rupture of the cell membranes. The more acid the fluids become, the greater the fluid ingress and cell destruction. Other lipolytic ferments, as that in venom, cause similar cell lysis through the breakdown of lipid components to lysolipins.

** The poliovirus, by virtue of its molecular structures, is unable to pass, as such, into the nerve-cell body without some cell decomposition occurring to make it pervious.

In behavior, this toxin resembles that of botulinine which causes similar degenerative changes in the motor cells of the medulla and spinal cord. (It would be interesting to learn if this toxin could be employed to excite production of a satisfactory protective antigen or immunizing body against poliomyelitis and encephalitis.) The spasm producing toxin of rabies, lyssine, the most deadly of all toxins appears to result from the breakdown of certain nerve components as lecithin and the like, in an anaerobic locale where the virus then becomes activated. (Attempts to break down such material by various physical and chemical means, to produce a toxin as lyssine have not proven very successful. It is quite possible that rabies-toxin is an aggregate of smaller toxin units). All viruses are of protein nature and/or derived from such, appearing to be pro-viruses until activation occurs within specific body cells where they then behave as toxigenetic enzymes, reproducing themselves in much the same manner as that of the ferments. In rabies infection, this neurotropic pro-virus becomes activated in an anaerobic locale at the initial lesion through contact with nerve protoplasm from which it then reproduces itself. Enzymic decomposition of specific nerve bases then appears to occur in the absence of oxygen, the morbid process moving upward along appropriate nerve tracts, with toxin production in the wake, until the brain becomes similarly affected when the fastigium of the disease than manifests itself. No other satisfactory explanation can be advanced that throws light, on the viral activation, reproduction, and the pathogenetics of this disease. The structural formulae of this and other very numerous toxins are not known. However, a structural correspondence or relationship exists among the virus, the viral toxin and the molecular structure of the body (substratum) capable of being broken down; all being likened to keys that fit corresponding locks. Further effort should be directed to attempt breakdown of protein-components to viruses, toxins, etc., by physico-chemical means. Eventually such efforts might attain success. As rabies is one of the viral diseases in which the actual portal of viral entry is definitely known, some tagging method of this protein pathogen is not beyond ingenuity. In animal inoculations, follow the virus through the body, noting its manner of reproduction, course and ultimate effects. Such a new method of the study of viruses, and bacteria, should produce most enlightening information.

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NINE PSYCHIATRIC COMMANDMENTS

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If we draw up a balance sheet of the catastrophic mental health situation of our country, it looks like this: more than half of all symptoms that bring patients to doctors, are of mental and emotional origin, more than half of all hospitalized patients in this country are suffering from mental and emotional disorders. A study in the State of Massachusetts, some years ago, showed that ten cents of every State tax dollar went to the care of schizophrenics, just one, (though the most important), of mental afflictions.

On the other hand, the total number of psychiatrists in the entire U. S. A. is only about thirty-five hundred. They work under pressure from morning to evening, being able to see about a dozen patients daily. One dozen patients a day while every thirteenth citizen in the U.S.A. is a mental case and needs their help!

The suggested program of a hurried, superficial training of psychiatrists is insufficient. In addition, psychologists and psychiatrically trained social workers are beginning to treat mentally sick persons. More or less confused dilettants, with more or less training, with more or less fancy group names are beginning to participate in the "healing" bedlam. The result is a lowering of the high level of trained psychiatric care, so necessary in the treatment of diseases which are highly explosive and dangerous, if not handled with care, plus true knowledge and experience.

Mental and emotional diseases cannot be treated with sufficient chances of success as long as the large amount of cases in need exist and continue expanding at a frightening tempo. A final solution to this problem lies then in only two directions: either to change, generally and fundamentally, the world in which we live and which forms fertile breeding ground for the germs of so many emotional conflicts, anxieties and guilt feelings, *or*, as in organic medicine, to prevent the diseases rather than trying to cure them.

A discussion of how political and social changes would affect mental health exceed the scope of this treatise.

It is rather our endeavor to show in the field of *child education* and parental behavior what

can be done to prevent mental disorders; to condense clinical experience to a few, basically important commandments to be given to parents, teachers, servants or any personnel surrounding the child in its early years of development.

Mental diseases, as far as they are not hereditary, constitutional or of glandular or toxic make-up, are the results of wrong education in childhood. The family is the child's world. Later on, all men will be conceived by this child as images of father, all women as images of mother. When an adult patient comes to my office complaining about the cold attitude of the world, I say to him. "Mother wasn't very affectionate toward you, was she?" If parents would only understand their responsibility! If they would only realize what each word from them means to the child, how each of their "innocent" gestures becomes magnified in the child's mind affecting its later life in a most fateful way!

How then can we prevent the emotional conflicts in later life? The break downs? The mental torments and ailments? How can we protect our children from becoming in later life mentally crippled and unhappy creatures sitting around hopelessly in our State asylums or filling the offices and giving thousands of dollars to the insufficient number of psychiatrists? By teaching and enlightening our parents. By making them understand what they have to avoid in their attitude toward children, how their behavior toward them has to be carefully and consciously directed.

Here is a condensed list of prescriptions and recipes. If meticulously observed these will eliminate to a great extent the conditions under which mental ailments will subsequently develop.

1. *Parents, avoid scenes or mutual reproaches between each other in the child's presence! If you must fight, go to the next room.*

For its normal growth a child needs an atmosphere of harmony and affection not less than it needs oxygen. You are gods, infallible. If this confidence is shaken, if you dethrone yourselves, the child will be confused, suffer in its basic needs. There will be a disastrous disturbance in the development of the conscience, an insecurity in the direction of moral values, with an emotional nihilism at the end.

2. *When a second or following baby is born, always show your special affection to the previous child or children.*

Every child feels the sudden shift of love and attention to the new sibling as a terrific shock. It will respond to it not only with a feeling of insecurity and the idea of not being lovable, but a murderous hate will develop. This hate is first directed against the newcomer, going to the extent of more or less conscious murderous drives toward the baby. In addition it will be directed against the same parents it is supposed to love. The result will be a fateful conflict with the development of guilt and anxiety which in later life might grow into a more or less severe mental disturbance.

3. *Avoid giving your child too much or too little affection. The "balance of love" is a necessary prerequisite for its later emotional balance.*

a. Don't give your child too much love. If a parent, especially a mother, is oversolicitous and overprotective, not giving the child a chance to develop to its own responsibilities by trial and error, it will be kept in a dangerous emotional dependency. It will be afraid not only to make its own decisions, but the anxiety and insecurity might spread to a general neurotic pattern, developing an anxiety neurosis or compulsive kind of thinking. This anxiety will increase even more dangerously if the mother adds to her bodily caresses a sensuality which only too often projects to the child her own dissatisfaction with her marital life. The child's early sex life will become fixated on her and make a later normal hetero-sexual adjustment difficult, if not impossible. The amount of guilt which such a situation implies, is self evident; its results might be disastrous often leading right to a psychosis. Another, not less detrimental picture will arise, when, under the disguise of love, this mother is possessive and domineering, constantly "advising" and mixing in the child's affairs, as well as nagging and criticizing. Here the child's resentment, hate and murderous rebellion which has no outlet and no chance to materialize on account of the mother's powerful authority, will again increase the child's anxiety and guilt, often laying the groundwork for a later homosexual personality structure.

b. Don't give your child too little love.

Every child expects to be given love, attention and affection. If it feels it is not wanted it will begin to distrust itself; it will feel depressed, insecure and inferior. It will anticipate and therefore invite its defeat when later on it must meet others. Such a child will constantly feel a failure and readily slip into a splendid isolation in order to avoid the painful experience of an imagined rejection.

4. *When the child is caught in an act of masturbation, don't threaten it with a punishment.*

More or less every child masturbates. (And every adult.) Though an extreme excess might in the long run be of some harm (like any excess), such harm is done more through the guilt feeling of giving in to a *forbidden* impulse than to any direct physiological effect. The threat of a chronic damage to the sexual organ or an irresponsible allusion to the aquiring of a mental disease might actually succeed in creating such insanity, though not by the masturbation, but by the inextricable conflict between the anxiety

and guilt feeling thus produced on one hand and the inexcapable sexual impulse on the other. There is neither bodily nor mental harm in masturbation; it is only the guilt feeling about it that might produce the latter.

5. *Avoid giving too much attention to the child's sex as well as to hiding it shamefully from him.*

There are some mothers who think it "funny" to play all sorts of "innocent" games with their young children. They caress the "cute" little behinds, they play with the "cute" little genital organs, they dress the little boy in girls dresses and the little girl in boys uniforms. In the morning hours, on Sundays, they take them into their beds, or the mothers are sleeping with their boys in the same bed, often until he is twelve years old. These kind of games are dangerous. The child's sex is prematurely aroused and fixated on the parent. The intense guilt feeling will then lead to a neurosis or even insanity. It will be difficult, if not impossible, to shift the sex feeling later to others. The guilt of such a fixation will result in homosexuality. The open display and accentuation of sex is not "progressive", but irresponsible and dangerous.

On the other hand, shameful hiding will be as fateful inasmuch as it will produce anxiety and guilt. The best way is, not to arouse artificially the child's sex, but to treat it naturally in its spontaneous appearances.

6. *Mothers, don't dominate your husbands!*

Again we have to understand that such a situation between the parents lays the groundwork for a homosexual development in the child. The equation between masculinity and aggressive domination on one hand and femininity and receptiveness on the other, is a principle basically felt by the child. The anatomic-biological structure of the body has its counterpart in the psychological aspect. If there is a strict domineering, aggressive mother and a soft, delicate, often artistic father who gives in easily, the child's body image will get confused. The boy will yield, full of resentment yet in masochistic enjoyment, to this "phallic" mother in a feminine receptiveness, and the girl, identifying herself with this mother, will develop into a Lesbian type of a woman, unfit for marriage, unable to adjust to any normal sexlife.

7. *Don't be too lenient, yet don't punish too hard.*

Each child has a tendency to use the parents, especially the mother, as an instrument to satisfy its desires and impulses. Giving in to each of them means enslavement of the parent as well as making the child unfit to accept frustrations in later life. An example of such wrong "kindness" is the child's protracted bedwetting. By soiling the bed and crying, it demands mother's immediate care. Simultaneously, the child's hostility on account of other frustrations is gratified by waking her up and getting her attention away from father. The bedwetting usually will disappear when mother ignores it.

Punishment should be used not as the rule, but as the exception. Beating especially, is often challenged by "naughtiness" and desired as an atonement for guilt. Such a masochistic behavior, when carried over to adulthood, creates a pattern where every chance for success—professional, social or sexual—is destroyed by the ego. Such children, when they grow up, will act under a compulsion to plunge into one situation after another where they must get hurt . . . and then complain about the "bad world" and the injustice done to them.

8. *Avoid unnecessary operations!*

It goes without saying that operations have to be performed when necessary. However, there are some, such as many tonsilectomies or hernia operations where the indication is not an immediate "must". We have to bear in mind that each of these operations mean also a psychic trauma, creating more or less grave anxiety and the feeling that something irrevocable is done to the wholeness of the body. Very often, when there is already an extensive guilt feeling present, especially on account of masturbation, the cutting is experienced as the "coming-true" of an expected and dreaded castration. This is particularly true in the case of circumcision. Though many might doubt that the infant, in the tender age when this operation is performed, could have any imprint of it on his memory, we think in particular of those cases where the older child witnesses the ceremony being performed on the younger sibling. Religion is a private affair, but we have also to think in terms of the welfare and mental health of our children and humanity. The percentage of homosexuality and consequent paranoic afflictions is frightening!

9. *Don't fuss around unnecessarily with the child's actions of elimination.*

Again it is selfunderstood that we have to see to it that the child has its normal and regular amount of excretion. However, since the child realizes very early what is expected from him, it gets its first weapon to assert itself against the will of the parent by witholding. The more fuss made by the mother, the more attention given, the more sadistic pleasure is derived by the child in opposing the expected act. Such a sadistic attitude when fixated, might become a pattern later for a general behavior, leading in its excess to a psychotic (paranoic) condition. In addition, the closeness to the sexual region will facilitate the creation of homosexual disturbances.

57 West 57th Street

TOXIC EFFECTS OF BACILLUS PYOCYANEUS VACCINE

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A search through the medical literature has not revealed any studies describing the effects of human parenteral injections of bacillus pyocyanus. Dr. Zinzer in his book on *Infection and Immunity* states that bacillus pyocyaneus is found occasionally in abscess cavities, in the nasal mucous membrane, and in the stools in various forms of diarrhea. Stools of infants suffering from summer gastroenteritis sometimes show a predominance of this organism. He further states that injections of the bacillus culture in guinea pigs is very toxic and will kill the pig in a few hours. However, he does not mention if it has ever been used in humans, if it has any therapeutic value, or if it would be accompanied by any toxic effect. Some bacteriology books refer to bacillus pyocyaneus as a laboratory contaminant, but none mention its use in an autogenous vaccine. Therefore, it was considered important to report the effect of bacillus pyocyaneus vaccine injections in a patient who suffered from bronchial asthma.

The following are the pertinent facts from a detailed study of the patient who was referred for treatment by his physician June 4, 1946.

Case History

Case: W. M., aged forty, single, newspaper reporter. C. C.: Bronchial asthma since October 1944 (one and a half years). Coughing and wheezing were worse the first winter and at night. However, for the last several weeks he had attacks day and night, as many as six to eight a day, which lasted from 15 minutes to 2 hours.

P. H.: Attacks have been irregular, may last for several weeks and then be absent for one or two months. Always accompanied by dyspnea, coughing and difficult expectoration. Sneezing spells and rhinitis alternated with nasal obstruction. Subject to winter colds, which are worse in spring (during May) and fall (during October).

Remaining history irrelevant.

On examination he had an acute upper respiratory infection with moist rales and wheezing throughout his chest. Tested for inhalents, various bacteria responsible for upper respiratory infection, dust, and pollen, he did not give frankly positive allergic reactions with whealing or pseudopods but did give delayed inflammatory reactions at the site of the injections, i. e., staphlococcus, pertussis, Friedlander's, pneumococcus. He had delayed positive reactions to house dirt.

Diagnosis: Asthmatic bronchitis as a result of respiratory infection and precipitated by overexhaustion.

An autogenous vaccine was made by his family physician at a local laboratory; i. e. a smear from the nose, and throat and sputum were cultured in one vaccine. This contained bacillus pyocyaneus 2 million per cc. (and some diphtheroids). Twice a week the patient received injections of a 1:10 dilution from his family doctor beginning with two mm. and increasing one mm. every third or fourth injection.

As the dosage was increased to four or five mm. he began to feel faint and complain of numbness and dizziness at the time of injection, even before the needle was removed. No attention was paid to this reaction since it was considered as subjective or nervous on the part of the patient. It persisted, however, occurring each time an injection was given. In spite of this, the dosage was increased. When finally eight mm. were injected subcutanously the patient fainted before the nurse could remove the hypodermic needle. There was some difficulty in reviving him. It was apparent that the fainting was due to the effect of the vaccine. The family physician was advised to discontinue its use.

In the meantime the patient grew progressively worse clinically, had a constant dry cough, and almost continuous asthma and dyspnea. Adrenalin injections and sprays were necessary for relief.

On further investigation for other etiologic factors, it was revealed that the patient had had recent contact with camphored clothes. He was advised to remove all camphored clothes and materials from both his bedroom and home.

A new autogenous vaccine was then made in a different laboratory. A smear from each side of the nose and throat and freshly expectorated sputum were all cultured and combined in one vaccine. This contained staphlococcus and streptococcus 3,000,000,000 per cc. Treatment was instituted with:

1. Autogenous vaccine 1:10 dilution.
2. Vaccine containing all the bacteria to which patient gave a delayed positive reaction. 1:10 dilution.
3. Stock house dust extract. 1:100 dilution.

Injections were given twice a week with these antigens, beginning with one mm., and increased slowly until ten or twelve mm. was reached. No constitutional reactions, fainting spells, or any other untoward reactions occurred with these injections while under our care. He was again referred to his own physician.

Comment

This case was deemed of general interest because of the organism concerned. This reaction with a vaccine of bacillus pyocyaneous may be termed an allergic or toxid reaction, but the terminology is of academic interest only. This experience emphasizes once again the importance of being constantly on the alert in treating any allergic individual.

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Editorials

Doctors As Social Leaders

It seems that there must be radical changes in medical education or in the way in which medical students are educated at the present time. In all professions and trades there is upheaval, almost chaos. The medical profession shares in this state of affairs, but whether for good or ill it is impossible to predict. In social medicine changes appear to be in the offing. It is recognized to some extent that environment, nutrition, industrial risks and so on each play a part in the genesis of disease and as there has been of late a greater interest in social medicine, there is the possibility of a deliberate attack on any social evil which directly or indirectly threatens the health of the community at large.

Recently Balberie, Tindall and Cox, London, published *An Approach to Social Medicine,* by Dr. John D. Kershaw, a stimulating book on social medicine in general and the part therein which is played or should be played by the physician. In it society is analyzed anatomically and physiologically and the common disorders of society are discussed from these points of view. Each section begins with a short chapter which outlines its theme and provides both a useful summing up and suggestions for delving into the matter more deeply. There is a bibliography at the end of each principal division. The conception of the plan is good and has been executed in a practical manner, while the author's style, emphatic when necessary, is easy to follow and enlivened here and there by graphic phrases. As he sees social medicine, it should be a philosophy of health and not so much a science or a mere extension of medicine. Of course, although it is in its adolescence and necessarily incomplete as it is now, it can be used to give some direction to social endeavor. In his opinion, (and perhaps this is the essence of the book) social leadership must be the responsibility of the medical profession, but not until there have been alterations in medical education. This book should be helpful to doctors, teachers and social workers in that it may assist or enable them to sort out their own thoughts in an orderly fashion; certainly a necessity if, as the author suggests, they are to become social leaders. Citizens also who have an interest in the country and in the welfare of its population should read it, as it contains advice which, if followed, may be a possible basis for better days to come for the country as a whole and for its individual members.

At any rate, there is no reason why doctors should not be social leaders (if, by social leaders is meant to prevent disease as far as they are able, and to keep society in as healthy a condition as possible from a medical point of view) that is if efforts in this direction are not to be greatly restricted by a government anxious to retain power in its own hands.

Amebiasis

Since the end of the war, clinicians have been on the lookout for Endamoeba histolytica as a cause of vague gastrointestinal and other symptoms incident upon residence in the tropics. This is highly important, but one should remember that amebiasis can be present anywhere, at any time, irrespective of tropical sojourn. *Osler,* 15th edition, edited by Christian, states that from 5 to 10 percent of the population of the United States is infected, and attention is again called to the outbreak in Chicago, in 1933, where a cross-connection between fresh water and sewage pipes caused an epidemic with several fatalities.

The disease is subtle, often hidden and unsuspected because even examination of stools may be negative. Dirty hands of carriers are capable of transferring the trophozoite and cyst forms to liquids and solids. Ingestion is then a simple matter. As in typhoid, carriers may be wholly innocent persons and, therefore, doubly dangerous. Moreover, symptoms may remain absent for months or years after invasion by the parasites. Routine examination of returned veterans should, of course, include "on the spot" stool studies, but it may require more than one or two such searches to disclose the enemy.

The bulletin of the New York City Board of Health, July 1946, warns against certain misconceptions. First, this is not a tropical disease per se, as was hinted above. Second, it is not a "dysentery" in the sense of showing blood and mucus in the excreta. Diarrhea may be slight or consist of one or two fluid stools in the morning which the host may regard as a sign of health, with normal gastroenteric behavior the

rest of the day. Loss of weight or bleeding may bring the patient to a physician who is likely to misinterpret these signs for a great number of conditions which are not actually present. There is no clinical picture of amebiasis. It may resemble spastic colitis, appendicitis, cholecystitis or right lower lobe pneumonia. A low-grade fever is not uncommon, possibly with chills which resemble malaria.

Abscess of the liver is the most common complication, but this may escape detection even though enlargement and tenderness be present. One may suspect carcinoma. In fact diaphragmatic abscess may be present, ultimately rupture into the pleural cavity and invade the lung, all of which make for desperate diagnostic doubt as to the origin of the findings. However, fever, pain and tenderness in the right upper quadrant should always call for frequent examination of the stools. A saline cathartic should be given and the stool examined as soon as passed, by laboratory concentration methods. Casual inspection may be deceptive. Cysts will determine the diagnosis, and it is these which infest carriers and remain latent as to causing symptoms.

Emetine hydrochloride serves well for a therapeutic test. It is exhibited as one mg. per kilo of body weight per diem. A dramatic response may be elicited within five days consisting of subsidence of fever, increased weight, return of appetite and general euphoria. This, too, makes for deception since "cure" can hardly be expected by such trifling means. Like the spirochetes of syphilis, these organisms are hardy and resist eviction.

The word "abscess" seems to call for surgery. This may be necessary, but the consensus of authority seems to be that neither aspiration nor surgery of the liver should be undertaken until emetine has been thoroughly tried out. Morbidity and mortality from operations on the liver in the effort to "drain the abscess" are said to remain "high", especially if emetine is not given before and after. Whether emetine is administered or not, the patient should have a course of arsenicals or iodine-oxyquinoline compounds. Those recommended are: Anayodin (Chiniofon), 3 or 4 pills, 0.25 Gm. each, t.i.d. for 10 days. Or Diodoquin, 3 pills, 0.21 Gm. each, t.i.d. for 20 days. Or Carbarsone, 1 capsule, 0.25 Gm. b.i.d. or t.i.d. for 10 days. This is merely an outline of treatment as laid down by the New York health authorities.

In any case, a disease which may be carried in the stools over long periods of time is reportable. A determined effort should be made to find the "source" and to prevent infected persons from distributing their unwelcome guests to others.

Alcohol On the Brain

Alcohol is a depressant drug but it releases our inhibitions. But what is its effect on the brain and how does the brain get rid of it? Apparently it is oxidized by the cells of the central nervous system, the alcoholized brain simply taking up more oxygen than normally. This involves the presence of an alcohol-oxidizing enzyme system in the brain that involves two important parts of the vitamin B complex, niacin and riboflavin.

Chronic alcoholics tend to eat sparingly and to suffer from vitamin deficiencies, especially an incipient beri beri caused by lack of vitamin B. If they lack niacin and riboflavin they may have a high content of unmetabolized alcohol in them. Hence, if you want to drink, be sure to eat, and be especially sure that your intake of niacin and riboflavin is ample.

Can Noise Kill You?

The answer is no. Scientific efforts were made during the war to find some lethal sounds that could be blasted down on our enemies to destroy them. None was found. No sounds were even discovered that would jitter the nervous system or cause nervous prostration. Any noises of the intensity of one hundred and twenty decibels, the decibel being a unit of racket, is very odious, and man can be unhinged by sounds which they regard as having ominous meanings or implying menace.

But insanity, nervousness, nausea, confusion, physical inefficiency, and fatigue do not occur because of noise. A noise intensity of 115 decibels for 8 hours a day, day in and day out, impaired neither a worker's efficiency nor his hearing. He might be temporarily deafened, but there was no permanent effect. Tremendous rackets can burst eardrums assunder, but distressingly painful sounds of one hundred and forty decibels merely make the ears ring and temporarily deafen. They do no permanent damage. Recovery is eventually complete.

MEDICAL ESSAY

Transference

B. LIBER
New York, N. Y.

There are misconceptions about transference, which in our medical sense, is a somewhat artificial term, created by psychiatrists for want of a better word. It signifies chiefly affection and esteem or a pleasant relationship between doctor and patient, although, more rarely, it is also used as an expression of dislike, or to connote an unpleasant doctor-patient association.

Most physicians believe it to be a situation or condition created only in the course of psychoanalytical work or, at any rate, connected with nothing else than psychiatry and psychotherapy and of no interest whatever to the other medical branches or the general practitioner. Still others think of it as a sort of vague erotic attachment between doctor and patient.

As a matter of fact transference never meant sexual love in any of its forms or nuances. Nor would or should love-making be a good tool for the cure of a mental or physical trouble.

Transference is rather a feeling of full confidence or great trust which may originate in the mind of the patient during his or her consultations with the doctor. Such a feeling is not only a necessity in the treatment of mental disturbances, but, to a certain extent, in the cure of physical disorders as well, although, of course, more so in the former than in the latter. If transference is not established, treatment or cure may not be impossible in bodily ailments. It may only prove to be less successful or success may be harder to attain. But in mental cases a complete lack of transference results in a real failure.

Some psychiatric theoreticians contend that many patients subconsciously regard all doctors, without exception, as "fathers", especially if in the patient's life no father has existed or if he has been less of a protector or leader than was expected.

It should be noted that the male doctor is generally not as good a lover as any other man. He knows too much. He cannot chase from his mind for a long enough time, the anatomical, physiological and psychological images concealed behind the external physical appearance of the female body. Any ordinary individual may be better equipped and adjusted for that purpose than he.

Some people cannot unburden themselves to a doctor because they erroneously connect their suffering with him, as if he were its cause and the cause of their misfortunes. They are like those children, brought to a physician when ill, to whom the doctor is the arch enemy, the devil incarnate. They are terribly afraid of him, suspicious of all his motions and gestures. With such children, of course, no cooperation is possible until *rapport* is present, and for this the help of the parents must be enrolled.

The attitude of such patients toward their physicians reminds one of the situation in Russia under the Tzars, when the peasants, afflicted with cholera or other epidemics, killed the groups of doctors sent to arrest the calamity. Those simple, uneducated and superstitious minds believed the medical men brought the disease, especially because those villages knew that everything bad in their miserable life always came from the authorities in the cities.

Naturally, when the above mentioned children are finally tamed and begin to feel friendship for the doctor, they become familiar and play with him fearlessly. As he has investigated them so they investigate him. They touch his stethoscope and want to know details of his life: Does he eat or sleep—and where? Does he have children too? Is that person—the wife or the nurse—his mother—since everybody must have a mother? A transference has developed.

But in our medical relationship with women the matter sometimes becomes complicated, because many persons of the "fairer" sex cannot simply accept a man's ideas, or learn something from him, or like his work or admire him, without falling in love with him. This seems to be a characteristic female trait. Men usually differentiate strictly between love and admiration, even if the admired person is of the opposite sex.

Many laymen have the wrong conception of the doctor. They somehow believe him to be supernatural if only in part. Yet he certainly is not, which is rather good. He is not a magician, although he may feel that a little magic would often come in handy. He has no wings, neither tucked in nor clipped. If he were even a wee bit divine, sitting on a tower and looking down on the poor humans caught in life's net, he would be incapable of putting himself in their place and understanding them. Essentially he is as they are and shares with them all their real and potential errors, qualities and defects, temptations and misbehaviors. This gives him the ability to see their motives, their viewpoints. (The only regrettable thing about this arrangement is that he also partakes of their illnesses.)

The patient approaches us with apprehension, not only because he is afraid of what diagnosis we might make, but also because he does not know what kind of person we might be. True, his picture of the physician is that of a technician who probably is trained for his business. But then, there are so many opinions about doctors in general and about each one in particular, that he is not even sure of the doctor's efficiency. And who is the man behind and within the doctor? No one ever thinks of other mechanics, of plumbers or electricians, in quite the same way, because they are not supposed to "fix" or mend the body, or solve a mental problem. How will the doctor react? Will he scare or intimidate or

exaggerate? Will he make light of the condition? Will he sneer at the patient's ignorance? Will he be supercilious, super-scientific and is he intelligent and accessible enough for conversation other than that regarding symptoms? Will he act as a friend acts, warmly and encouragingly?

That the patient is worried and diffident is not surprising. Were it otherwise it would be illogical. The normal people, those who are not afraid of disease, are logically neglectful and, whether they are right or wrong, whether we like it or not, that is usually a sign of health.

But patients do not realize how much the doctor may be afraid of them. In the extreme cases we may be in the position of the young dentist whose patient was badly scared before an extraction because it was his first one. "It is my first one too", was the consoling reply.

Do the old men in the profession who began their career and office practice with as much knowledge as they could have then, but with great hope and deep conscientiousness, still remember their attitude toward their first patient?

Until then they had worked under the shelter of a teacher, a supervisor or somebody who knew what was necessary, and who was responsible. They were part and parcel of a hospital. Their mistakes were those of the big and impersonal institution. But now they were to be let loose and on their own, like the baby who has just mastered the art of walking and who still holds his arms awkwardly outstretched and stands with his legs wide apart. They are going to face somebody who belongs to the entire world, to a crowd, to a family, somebody who will look anxiously at his savior, lend him attributes that he certainly does not have, and who will examine the doctor even more than the latter will examine him. What will this patient think of him? What will his impression be? How will he speak of the doctor to his friends? And suddenly the new physician has forgotten everything he thought he knew, he feels useless and inferior—a situation that is surely not conducive to transference. This feeling of terrific loneliness and emptiness will occur rather in the finer medical characters. Those who are sure of themselves, who believe they know it all and that everything is easy, belong to the poorer specimens.

But this writer is acquainted with several eminent practitioners who have absorbed so much skepticism, that they begin to doubt their own science and their own ability. One man, excellent in his field, said: "My clientele trusts me implicitly, they'll accept anything I say or give them. I'm afraid of becoming too self- confident and therefore to slip too often."

On the other hand, as the object of transference is to impart to the patient sufficient self-confidence, the doctor himself must not be devoid of it. Although the Damocles sword of possible failure forever hangs over our heads, practical wisdom demands that we too relax and disregard our fear, as otherwise our work would never be feasible. Do we not also plead with our patients to quiet down and get rid of their tension?

Transference will never take root if we do not understand our patients—and we cannot understand them if we only look myopically and without any perspective at their local or narrow ailments or difficulties. It is necessary to know their wider relationships, their living circumstances and then to create a background of sympathy. The social and economic environment must never disappear from our horizon. We do not treat people in a vacuum or as if they are fallen from the moon, isolated and without any ties to other human beings and to groups.

The patients and all those who call on us are our world. We can find good examples to be taken from the artist, especially those called naturalists or realists. Téniers, Breughel and other masters loved the humble shepherds and peasants whom they immortalized. The German modern painter Corinth put himself on a canvas with his arm around his model's shoulder. And our own Robert Henri said about the subjects of his marvelous pictures, the ruddy Irish of the more modest social classes: "They are all mine." Millet painting milkmaids, field-and-barn-hands, claimed to be all theirs.

Civilian Rehabilitation

As part of a full scale program, two new rehabilitation wards were opened recently at New York's municipal Bellevue Hospital. Designed to provide a complete program of physical rehabilitation for disabled civilians similar to that now available to disabled veterans through the Veterans Administration, the two wards, which will accommodate eighty patients, comprise the first medical rehabilitation program in any civilian general hospital in the nation.

In these wards persons on crutches learn to get on and off a full-size model of a New York City bus, to get up unaided after a fall, to walk up curbs and ramps, and the scores of other activities which will lead them to personal independence.

The new Bellevue program is an outgrowth of a grant of $250,000 given in 1944 by The Baruch Committee on Physical Medicine to the New York University College of Medicine which is responsible for the professional services of the new department.

Plans are going forward to provide similar rehabilitation wards in other city hospitals. Dr. Howard A. Rusk, head of the Department of Rehabilitation and Physical Medicine at New York University College of Medicine and at Bellevue Hospital, who has been appointed Consultant in Rehabilitation to the Department of Hospitals will supervise the expansion of the program.

News Items

Psychiatric Aide Award.—The National Mental Health Foundation has extended to September 30, 1947, the closing date for entry of candidates for "The Psychiatric Aide of the Year". All nomination blanks must be postmarked no later than that date and addressed to the National Mental Health Foundation, 1520 Race Street, Philadelphia 2, Pa.

Course for Reserve Officers AAF School of Medicine.—Twenty Medical Corps Reserve Officers will attend a 90-day course at the Army Air Forces' School of Aviation Medicine at Randolph Field (San Antonio), Texas, and graduates will be designated as AAF aviation medical examiners.

The course, lasting from October 6 to December 12, will stress the fundamentals of aviation medicine and the special physical examinations compiled for flying personnel. Medical Corps Reserve Officers under 40 years of age who are physically qualified for flying and hold an efficiency index of 4.0 or better are eligible for the course. Officers now designated as flight surgeons or aviation medical examiners will not be accepted for the training.

Applications can be made by writing directly to the Military Personnel Section, Office of The Surgeon General, War Department, Washington 25, D. C.

Motion Sickness.—There is now available to the physician an effective preventive and therapeutic agent for motion sickness (sea, air, train and car sickness).

Of all drugs recommended for motion sickness, according to Damrau (**Medical Record,** July 1947), those of the scopolamine hydrobromide group have proved most effective. The partially detoxicated aminoxide of scopolamine hydrobromide (scopolamine aminoxide hydrobromide) possesses distinct advantages. This aminoxide is one-third as potent as the parent drug but only one-sixth as toxic, permitting full therapeutic effect with far less risk of undesired reactions.

In isopotent doses, the duration of effect of the aminoxide appeared to be about one-third that of scopolamine hydrobromide. This would seem to constitute a marked advantage in combatting airsickness, particularly on short flights, since full protection can be afforded for the desired length of time without after-effects. In longer air journeys and at sea, the briefer action of the aminoxide permits more definite therapeutic control with reference to weather conditions and the needs of the patient, since the effective dose may be repeated as needed without danger of cumulative toxicity. Scopolamine aminoxide hydrobromide is available for prescription as Scopodex Pellets.

New Journal.—Announcement has been made of a new medical periodical, *Excerpta Medica.* This journal plans to publish a complete survey of all medical literature in the form of short abstracts, prepared by a staff of upwards of three thousand specialists supervised by four hundred Editors, all of them ranking representatives of their profession.

Grants for Nutritional Studies.—According to Dr. Robert S. Goodhart, scientific director of the National Vitamin Foundation, four grants-in-aid amounting to $32,800 have been voted by the foundation for nutritional studies. Awards were approved by the Board of Governors effective July 1, 1947. Additional financial grants will be announced at the foundation's semi-annual fall meeting.

A grant of $13,000 went to the Philadelphia Lying-in Hospital to determine the significance of nutrition and nutritional deficiencies in pregnancy. The University of Vermont School of Medicine received $5,800 for a nutrition survey being conducted on the school children of Burlington, Vt. The University of Southern California School of Medicine was awarded $6,000 for a study of the role of nutrition in specific immunity and hypersensitivity and a grant of $8,000 went to New York University for the study of the relation of pantothenic acid to the adrenal gland and carbohydrate metabolism.

Presently in effect, Dr. Goodhart said, are ten grants-in-aid voted by the foundation during 1946 to nine universities and one state institution for the conduct of studies on the relation of nutritional factors to various vital phenomena in the human subject and experimental animal.

Microtherm.—Approval certificate D473 has been granted by the Federal Communications Commission to Raytheon Manufacturing Co., Waltham Mass., covering its new Microtherm microwave diathermy unit. A frequency of 2450 megacycles has been assigned.

Pursuant to recent FCC rules, no equipment can now be manufactured that does not comply with its new rules and regulations which specifically confine the radiation of diathermy equipment to a limited portion of the radio spectrum.

Any existing diathermy equipment will be permitted by the FCC to operate for a period of five years from July 1, provided no interference is reported. In the event interference is reported on any existing equipment, the operator will be forced to discontinue using the equipment, and either reengineer it to meet the new regulations or cease operating it.

Not only does the radar frequency diathermy equipment have FCC approval, but the use of these higher frequencies make possible significant diathermy advantages which may well replace all short wave diathermy equipment.

The New York Academy of Medicine.—The New York Academy of Medicine announces its twentieth graduate fortnight, October 6 to 17, 1947, on disorders of metabolism and the endocrine glands. The program includes morning panel discussions, afternoon clinics, evening lectures, scientific exhibits and demonstrations. The schedule of evening lectures is as follows:

October 6 *Opening Address*—George Baehr, President, The New York Academy of Medicine, The Ludwig Kast Lecture—The diseases of Adaptation, with Main Emphasis Upon Hypertension—Hans Selye, Institute of Experimental Medicine and Surgery, University of Montreal.
The Carpenter Lecture—Adaptation Syndrome in Man—John S. L. Browne, McGill University Clinic of the Royal Victoria Hospital, Montreal.

October 7 Energy Metabolism in Obese Persons—Louis H. Newburgh, University of Michigan Medical School.
Psychological Aspects of Obesity—Hilde Bruch, College of Physicians and Surgeons, Columbia University.

October 8 Relation of the Adrenals to Immunity—Abraham White, Yale University Clinical and Experimental Studies on Adrenal Cortical Hyperfunction—Louis J. Soffer, Mount Sinai Hospital.

October 9 Metabolic Consequences of Immobilization—John E. Deitrick, Cornell University Medical College.
Use of Androgens in Women—Ephraim Shorr, Cornell University Medical College.

October 10 Studies in Intermediary Metabolism Conducted with the Aid of Isotopic Tracers—DeWitt Stetten, Jr., Harvard University Medical School.
The Excretion of Urinary Steroids in Health and in Disease — Konrad Dobriner, Sloan-Kettering Institute for Cancer Research.

October 13 Disturbances in Electrolyte Metabolism in Man and their Management—Daniel C. Darrow, Yale University School of Medicine.
Role of Amino Acids in Nutrition—William C. Rose, University of Illinois.

October 14 Metabolic Functions in Old Age—Nathan Shock, U. S. Public Health Service, Baltimore City Hospital.
General Aspects of Cushing's Syndrome—E. C. Reifenstein, Jr., Sloan-Kettering Institute for Cancer Research of the Memorial Hospital Cancer Center.

October 15 Hormonal and Chemical Factors Regulating Thyroid Function—Rulon W. Rawson, Harvard University Medical School.
Some Clinical Experiments with Antithyroid Compounds—Edwin B. Astwood, Joseph H. Pratt Diagnostic Hospital, Boston.

October 16 Testicular Dysfunction, Some Clinical Aspects—E. Perry McCullagh, Cleveland Clinic, Cleveland.
Use of Androgens in Men—Carl G. Heller, University of Oregon Medical School.

October 17 Why Do Women Abort—Arthur T. Hertig, Harvard University Medical School.
Morphological Basis for Menstrual Bleeding—Joseph E. Markee, Duke University.

The registration fee is $5.00. A program will be mailed to every Fellow of the Academy without request, and to other physicians upon request to Dr. Mahlon Ashford, 2 East 103 Street, New York 29, N. Y.

Atomic Radiation Unit Formed by USPHS.—The formation of an Atomic Radiation Unit in the chemical section of the Industrial Hygiene Division, U. S. Public Health Service, has been announced by Dr. J. G. Townsend, chief of the Division. The new unit has been formed to meet a need on the part of institutions and industries, at present handicapped in their desire to use radioactive isotopes and high energy machines by their lack of information regarding the safe handling of dangerous quantities of radioactive materials. It will advise and assist State industrial hygiene units in detecting and evaluating health hazards produced by radioactive isotopes, and, working through these State units, will help institutions and industries evaluate their hazards and establish safe working conditions.

Schering Technical Exhibits—The first of a series of technical exhibits on new products, developed and brought to the forefront in therapeutics during the War years, was presented recently at Halloran Veterans' Hospital, Staten Island, New York, by the Schering Corporation, Bloomfield, New Jersey. The exhibit was part of a planned program to keep medical and pharmaceutical personnel abreast of progress in therapy and research. Featured in the exhibit were Priodax, the new and effective oral diagnostic aid for gall bladder visualization; Estinyl, Schering's ethinyl estradiol, a modification of the true follicular hormone, alpha-estradiol; and Neo-Iopax, radiographic medium for urinary visualization.

Present plans call for these exhibits being shown at other VA hospitals in the New York area as well as throughout the country.

Grant for Rutin Study.—A research grant for the study of rutin has been made to the University of Nebraska by The Smith-Dorsey Company, a member firm of the American Pharmaceutical Manufacturers' Association, according to an announcement by the company's Director of Pharmaceutical Research, Dr. F. S. Bukey. The work will be under the direction of Dr. Harry Miller, director of the University's chemurgy project, a division of the College of Agriculture.

Rutin, which is derived from buckwheat, is used in the treatment of capillary fragility. Dr. Miller intends to select varieties of buckwheat which are high in rutin content and conduct plant breeding studies in an attempt to develop a superior strain. He also intends to try a new method of extraction of rutin from the buckwheat plant.

Samples of the extracts obtained will be turned over to Dr. Bukey and H. P. Jensen of The Smith-Dorsey Company for further pharmaceutical study.

Medical Service Corps Gets Regular Army Status.—A far-reaching change in the permanent organization of the Medical Department of the Army went into effect recently following approval of legislation creating a Medical Service Corps in the regular establishment.

This legislation makes it possible for the first time to give Regular Army commissions to bacteriologists, entomologists, psychologists, sanitary engineers, pharmacists, chemists, electronics experts and the like. These will be grouped together in a new corps under the Medical Department of the Army.

Under the present legislation the Surgeon General is free to use his discretion, as the need arises. The strength of the new corps will be prescribed by the Secretary of War. Grades will range from second lieutenant to colonel.

VA Residency Training Aims.—Efforts to encourage doctors who complete residency training in one of its hospitals to accept full-time probational appointments in its department of Medicine and Surgery, are being made by Veterans Administration.

Upon the satisfactory completion of three years' probational work, appointments become permanent. Every effort is then made to place these doctors in positions where they may practice their specialties. To qualify for the Specialty Boards of their choice VA offers guidance to doctors who will serve in its hospitals, both during and after completion of residency training.

Guidance in the field of psychiatry also is offered in mental hygiene clinics where the chief of clinic has not been certified by the American Board of Neurology and Psychiatry, provided the chief is a capable specialist.

In many fields, such as dermatology, ophthalmology and otolaryngology, guidance might also be received by doctors at regional offices.

Tuberculosis Training Offered by VA.—Residency type training in tuberculosis will be offered by Veterans Administration for the first time in its history. It will be available in hospitals at Bracksville, Ohio, Alexandria, La., Excelsior Springs, Mo., Oteen, N. C., and McKinney, Texas.

Although the hospitals at Alexandria and Oteen are not now associated with medical schools under the VA Deans' Committee plan, physicians serving there may earn credit toward the examinations of the American Specialty Board for Internal Medicine and its sub-specialty board for tuberculosis.

Army Hepatitis Research.—A hospital at Bayreuth, Germany, has been taken over as an American Army research center for the study of infectious hepatitis. The causative organism and method of transmission of hepatitis or jaundice thus far have defied detection. The malady is characterized by fever, nausea and abdominal disturbances, usually accompanied by the yellow color associated with jaundice. It has been established that it is due to a filterable virus but the virus itself has not been isolated. Nor has it been possible to find any experimental animal subject to the malady. The virus is known to be extremely infective but there is no agreement as to how the disease is spread or its incubation period. Water is suspect. There is also some reason to believe that the disease is much more common than generally supposed and that it often appears in a sub-clinical form which is not recognized by the victim. The study in Germany is being carried out under the direction of the Commission of Virus and Rickettsial Disease of the Army Epidemological Board.

Construction Started at St. Vincent's.—Authorization has been given to start the actual building of the Alfred E. Smith Memorial at St. Vincent's Hospital in New York City. The work includes a ten-story building on 12th street, which will replace part of the present section of the hospital on 12th Street east of Seventh Avenue; remodeling and modernization of the present main building at the northeast corner of Seventh Avenue and 11th Street; and a two-story construction under the present interior courtyard, of a modern kitchen and laundry large enough to serve the entire group of hospital buildings. The project, expected to be completed in 1949, will provide the most up-to-date hospital facilities and conveniences for both the care of the sick and the administration of the institution. Pneumatic tube systems for carrying records and drugs to various parts of the hospital, a central oxygen service that will eliminate the carting of tanks through the buildings will be provided. The present power plant will be abandoned and all steam and electricity needed will be obtained through street service and public utilities.

VA Exhibit of Prosthetic Devices.—Veterans Administration reference exhibit of prosthetic devices—the only one of its kind in the world—has been completed after more than a year's work and may be seen in Room 890, Veterans Administration Building, Vermont and H Streets, N. W., Washington, D. C.

The exhibit is open 10 a.m. to 4 p.m. Mondays through Fridays to doctors, manufacturers, research authorities, disabled veterans and others interested in artificial limbs and similar devices for the disabled. It contains almost 1,000 items including practically every available known type of artificial arms, legs, hearing aids, aids for the blind and other devices which may aid the physically handicapped. Also shown are plastic eyes, wigs, cosmetic hands, facial prosthetic devices, wheel chairs, crutches and canes. More than 350 different types of artificial legs and arms are on display.

With the exception of experimental models, all of the devices shown are available to disabled veterans under VA's free choice of appliances policy. All are available to physically handicapped non-veterans through private industry.

Henry Russel Award.—Dr. Burton L. Baker, assistant professor of anatomy at the University of Michigan, has received the annual Henry Russel Award.

Dr. Baker, 22nd recipient of the Henry Russel Award, was chosen for this honor by the University Senate. The award goes each year to the faculty member with the rank of assistant professor or instructor whose achievements in scholarly activities and whose promise for the future seem to merit the appointment. Both the award and the lectureship are made possible through a bequest of the late Henry Russel, LL. B., Detroit.

Dr. Baker's selection for the award was made as the result of his research work dealing with the microscopical structure and the internal chemistry of cells, especially in relation to their secretory activity. His investigations have centered about those endocrine glands which regulate the physiology of reproduction, particularly the pituitary gland, the gonads, and the placenta.

The general objective of his studies has been to determine more precisely the role which the individual cells of these glands play in the control of reproductive activities and other body functions. One phase of the program which is being actively pursued at the present time involves collaboration with Dr. Dwight J. Ingle, of the Upjohn Company's research staff. In this work an attempt is being made to determine the manner in which the adrenal cortex influences the structure of the body. This part of Dr. Baker's research program is being supported by a grant from the Upjohn Company.

Personal—The appointment of *Dr. Harry W. Feinstone* as director of research and development, has been announced by the Central Pharmacal Company, Seymour, Indiana. Dr. Feinstone was director of Biological Research for the Pyridium Corporation since 1943 and prior to that played an active role in the development and introduction of a number of sulfonamides, including sulfadiazine, while with the American Cyanamid Company.

Dr. Bernard Heineman has joined the bacteriology research department of Bristol Laboratories, Inc., Syracuse, New York. Dr. Heineman is a member of the Society of American Bacteriologists and the American Public Health Association.

Dr. James B. Mennell, of St. Thomas Hospital, London, England, and Oxford University, recently gave a concentrated course in manipulative surgery at the Columbia Presbyterian Medical Center, New York City, under the sponsorship of the Columbia University Faculty of Medicine.

Dr. Leo M. Davidoff and *Dr. Milton J. Goodfriend* of New York were honored recently at the 37th Annual Convention of the Tau Delta Phi fraternity, in New York City. Each received a certificate in recognition of meritorious achievement in his chosen field.

The recent retirement of *Dr. Bertrand E. Roberts,* Poughkeepsie District Health Officer, has been announced by the New York State Department of Health. Doctor Roberts had been associated with the Department since 1922, first as epidemiologist and, for the past seventeen years, as District State Health Officer in charge of the Poughkeepsie area comprising Dutchess and Putnam Counties.

Dr. J. M. Gershberg of New York, flew to Latin America recently to complete arrangements for the forthcoming Latin American Congress of the International Spanish Speaking Association of Physicians. Enroute, Dr. Gershberg spent some time in New Orleans where he was the guest of *Prof. Ochsner,* of the Ochsner Clinic. Prof. Ochsner is president of New Orleans Chapter 59, of the Association.

The death of *Dr. Mary Lydia Hastings Arnold Snow,* of New York City and Catskill, New York, was announced recently. The widow of the late Dr. William Benham Snow, with whom she practised medicine in New York for thirty years, Dr. Mary Snow had also been co-editor of the *American Journal of Electrotherapeutics and Radiology.* She was a member of the leading medical societies and of the American Medical Editors and Authors Association.

Colonel Florence A. Blanchfield, chief of the Regular Army Nurse Corps, and the first American woman to receive a full commission in the Regular Army has begun her final leave and upon its completion will retire from active Army service.

Dr. Tauno Putkonen, venereal disease control officer for Finland, recently was the guest of the New York State Department of Health during which time he studied the work of the Division of Syphilis Control, directed by *Dr. William A. Brumfield.*

LETTER FROM BRITAIN

(From Our Own Correspondent)

Some changes have come and more medical innovations are expected in this somewhat disturbed country. As far as the medical profession is concerned it is still more or less where it was but is on the *qui vive*. Great alterations seem to be contemplated by the government whereby some of its freedom will be curtailed. It appears that individual effort in practically most phases of endeavor will be restricted. The medical men of the future will be subjected to a considerable loss of free action if the speculations of those who assume to themselves foresight come to pass. In any event and happen what may physicians and surgeons will be as greatly in request as ever. The millenium will not come from politics however advanced. After all, self-preservation is the first law of nature, a healthy country is a contented country, and the reverse is also the case. The medical profession is essential to the well-being of a community. It will continue to exist under whatever guise and under whatever rules the National Health Act has passed or will pass.

Food Cuts

It goes without saying that a more meagre food supply, in addition to high prices, will be most unwelcome. Also the outlook from this viewpoint is serious. For more than one reason the food supply from abroad, upon which we depend mainly, is likely to be reduced further and it is obvious that we cannot hope for an early return of the abundance of food imported formerly, indeed it is unlikely that this will happen again. The facts must be faced and when the stuation is realized the best must be made of a short supply while efforts should be put forth to produce more food in the country itself and to import as much as possible of good quality. The medical profession is interested in this question and can advise on many points. One thing stands out when food is discussed—that quality is of greater consequence than quantity.

Central Health Services Council

This council is to be constituted as the chief advisory body under the National Health Service Act. It will consist of 41 members, six of whom will be the presidents of the three Royal Colleges, the President of the General Medical Council, the chairman of the Council of the British Association and the chairman of the Society of Medical Officers of Health. Fifteen members are to be general practitioners. There are to be three dental surgeons, two persons with mental health experience, two nurses, one midwife and two pharmacists. The others will be five laymen, who have had experience in hospital management and five experienced in local government.

Mobile Surgical Unit for Birmingham

A mobile surgical unit, presented by the Austin Motor Co., Ltd., began work in Birmingham on August 11th.

School of the Royal Free Hospital, London

The title of the Royal Free Hospital in London, School of Medicine for Women has been changed to the Royal Free Hospital School of Medicine. In the session of 1947 men students are to be accepted at the school for the first time.

Bodies for Anatomical Teaching

The Norfolk Public Health and Assistance Committee recently reached a decision regarding the disposal of the bodies of those who die in its public assistance institutions. It was agreed that when no objection was raised by a committee of the Local Guardians such bodies may be sent to the School of Anatomy at the Medical School Department of the University of Cambridge. This course, however, can be taken only subject to there being no known relatives, or after receiving approval of known relatives, as well as after all other safeguards and conditions with respect to burial have been observed. The Norfolk Public Health and Assistance Committee's decision followed representations from the Cambridge University School of Anatomy that the number of bodies received under the Anatomy Acts is insufficient to meet demands owing to the increase in the number of medical students at the Cambridge University Medical School.

Mosquitoes and Yellow Fever in the Sudan

In the *Bull. Ent. Res.*, 3, pt. 4: 1947, Dr. J. Lewis of the Stack Medical Research Laboratories has discussed the relationship of mosquitoes and yellow fever in the Sudan. It is noteworthy that several towns in the Sudan, in a yellow fever area, lie on important air, rail and water routes leading to countries free from yellow fever. It may be said that some 140 species of mosquitoes are known from the Sudan and of these twelve kinds are known to be capable of transmitting the yellow fever virus, while several other kinds are suspected in this connection. The object of Dr. Lewis' paper was to record information on the occurrence and distribution of mosquitoes in the Sudan, an object which he has achieved. The information derived from his investigations and researches is extremely valuable in this transport-by-air age. It is not generally realized that this means of transport affords favorable opportunities for conveying the germs of infection from one country to another and from district to district.

At a recent meeting the London County Council accepted a recommendation by its hospitals and medical services committee that a physician for physiotherapy should be appointed at a salary of £1,000 ($5,000) a year.

(*Continued from page* 541)

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16 Gothic Ave.

Goldscheider's disease, (epidermolysis bullosa), after Alfred Goldscheider, a German, born in 1858. Tilbury Fox is accredited with having described two cases of the disease in 1879, three years before Goldscheider.

* * *

Erythema elevatum diutinum is accredited to Judson Sykes Bury as *Bury's disease.* It was first described by Middleton in 1887. The name was given by Crocker, although Graham Little and Stelwagen considered that the disease belonged to the domain of granuloma annulare.

John Templeton Bowen, of Boston, described the new precancerous dermatosis (*Bowen's disease*) with which his name has become associated. Darier has confirmed the peculiarity and rarity of the affection.

* * *

Blastomycosis is known as *Gilchrist's disease,* after Thomas Caspar Gilchrist, of John Hopkins University. The name *Oidium Gilchristii* has also been given to one form of the organism causing the disease. Gilchrist has numerous dermato-bacterial studies to his credit.

Book Reviews

Metabolism

Carbohydrate Metabolism. Correlation of Physiological. Biochemical and Clinical Aspects. By SAMUEL SOSKIN, M. D., director of the research institute, Michael Reese Hospital; medical director, Michael Reese Hospital; and RACHMIEL LEVINE, M. D., director of metabolic and endocrine research, Michael Reese Hospital. Illustrated. Chicago: The University of Chicago Press, 1946. Pp. viii+315. Price $6.00.

Recent advances in the mechanism of carbohydrate metabolism have lead to the preparation of this monograph whose purpose is to correlate the physiological, biochemical and physical aspects of human energetics. Each of these subjects are usually presented as separate entities to the medical student without correlation of the actual metabolic processes involved. After an introductory chapter on the role of carbohydrates in nutrition and the enzymic machinery involved in their transformation into energy, the author elaborates on the nature of the materials important to carbohydrate metabolism and the site of orgin of blood sugar. The whole panorama on diabetes is evaluated clinically and chemically in connection with standard forms of therapy. The role of each of the endocrines is formulated in terms of their respective functions in the metabolism of starch and sugars. Finally, there is a complete integration of physical and clinical aspects of medicine from the standpoint of regulation of carbohydrate metabolism and the present frontiers of research in metabolism as a whole. Each chapter is documented with references to world literature. Careful perusal of the monograph transforms one's notion of the subject into a vivid reality of human energetics.

Nursing

Textbook of Psychiatric Nursing. By ARTHUR P. NOYES, M. D., superintendent, Norristown State Hospital, Pa.; and EDITH M. HAYDON, R. N., superintendent of nurses, St. Elizabeth's Hospital, Washington, D. C. Fourth edition. Illustrated. New York: The Macmillan Co., 1946. Pp. ix+396. Price $3.00.

The first edition of this guide was published in 1927. Since then, there have been revisions: 1936, 1940, and this one in 1946.

With "advances" in nursing as well as in "medicine", techniques and specific therapy have grown or have been widely changed. The original title took in too much territory; the present is more fitting.

Every nurse as well as every doctor must be a student of applied psychology. Anyone who does not know, or cannot learn, how to "get along with" people, especially sick people is doomed to failure. While the mentally ill may also be physically out of sorts, the reaction of mind on body and vice versa is a truism which belongs to the ages. Moreover, since medication is likely to be the least important part of therapy in mental conditions, *management* is, perhaps, even a preferable term to *nursing,* although it includes the work which the doctor must lay out for the nurse to follow.

Keeping a patient comfortable and happy constitutes a major part of nursing service, and one's wits may often be put to the test in endeavoring to cope with an unexpected condition. It is impossible to set all this down in any textbook, but the collaborating authors have done very well in covering practically all that a nurse needs to know in "the average case"; which means in psychiatric work that there is no such thing as average. Every off-center mentality is highly individualized, and only by a close-up of the patient at hand can one engineer the problem. This knowledge comes with experience, to be sure, but it is indeed helpful, to have this excellent book as an introduction to what one may expect to meet with at the bedside or in the ambulatorium.

Pediatrics

The 1946 Year Book of Pediatrics. Edited by ISAAC A. ABT, D. Sc., M. D. Chicago, Ill.: The Year Book Publishers, 1947.

This yearly summary of contributions to pediatrics gives the working essentials of over 300 articles selected from clinical and scientific journals throughout the world. It enables the physician to obtain answers to scores of questions regarding recent advances in pediatric practice. There is the usual subdivision of problems pertinent to the newborn child and adolescent and of progress in the various fields of diagnosis, prevention and treatment of children. An unusual feature of particular application to children, is an article on therapeutics and toxicology.

The clinical significance of heart murmur is an outstanding contribution, differentiating functional from organic and congenital from rheumatic murmurs. Then, there is a summary of the digestive disorders in infancy with emphasis on diagnosis and differentiation of the mild from the severe forms. There is an evaluation of the early recognition of choleriform or toxic state and its management. At long last, an agent helpful in tuberculous meningitis is discussed for streptomycin with a six-months survival period. With emphasis and exploitation of salicylates in rheumatic fever, cases of salicylate intoxication are a timely warning. Jaundice at every age level from the diagnostic and therapeutic standpoint constitutes a practical symposium. There is also an evaluation of proctologic problems, disturbances in lipid metabolism, treatment of acute anterior poliomyelitis and subacute endocarditis. There are, of course, the common conditions encountered in pediatrice practice with new slants on their mechanism and management. Every physician who is responsible for the well-being of infants and children will be rewarded by a quick review of this well prepared year book.

Allergies

It's An Allergy! By FRANK G. CRANDALL, JR., M. D., director of the allergy clinic, University of California, Los Angeles Medical Department, Fellow of the American Medical Association, Colonel, Medical Corps, Army of the United States (Ret). Hollywood, Calif.: Murray & Gee, Inc., 1946. Pp. 313. Price $3.50.

Allergic manifestations have been vaguely recognized since ancient times, although their mechanism has been understood for a period which is very short in comparison. It comes as a shock nevertheless, to appreciate the fact that one-half of the people are victims of this form of disease.

This book, apparently the first of its kind to be written for the lay person and the allergic patient, includes a discussion, comprehensive enough for this type of reader, of the definition, causes, mechanism, frequency, diagnosis and treatment of the allergic mechanism and its manifold manifestations. There are complete lists of the many allergens. There are chapters for allergy in general, for hay fever and asthma, for the gastro-intestinal group, for migraine and its relation to histamine, for the ear, nose and throat group, for the nervous system and for physical allergy. The section for the skin allergies is especially good. The methods of testing and the available forms of treatment are also described, and the difficulties of the latter and the necessity for persistence are emphasized.

The chapter of advice to the allergic patients is perhaps, of greater value to the patient himself, as it presents in simple readable language, a set of rules by which the author believes an allergic patient may regulate his living in such manner as to obtain the maximum amount of relief. All in all, the book is of great value for the purpose for which it was intended.

Ego-Psychology

The Ego and the Mechanisms of Defense. By ANNA FREUD. Translated from the German by CECIL BAINES. New York: International Universities Press. Inc., 1946. Pp. x+196. Price $4.00.

This is the first edition of the author's contribution to psychoanalytic ego-psychology as postulated by Freud himself. Although this text is clearly written, a fundamental knowledge of the Freudian school is essential to its understanding. The subjects covered are: Theory of the mechanisms of defense; examples of the avoidance of objective "pain" and objective danger (which includes denial in phantasy, denial in word and act, and restriction of the ego); examples of the two types of defense (including identification with the aggressor and altruism); and lastly, defense motivated by fear of the strength of the instincts as illustrated by the phenomenon of puberty.

The best and most original part of this volume is that dealing with child analysis. The statement the author makes on the methods of child education is well taken. She writes, "The real point at issue is how far it must be the task of education to induce children of even the tenderest years to devote all their efforts to assimilating reality and how far it is permissible to encourage them to turn away from reality and construct a world of fantasy." This problem is described at length in an interesting fashion with numerous helpful case histories.

Why some children play the role of spectator and others a more active part in play is discussed in a stimulating manner. How identification with the aggressor applies to children and how it forms a common stage in the development of the super-ego is convincingly treated.

A very common sense explanation of the motivation behind altruistic surrender is well covered in the sub-chapter, "A Form of Altruism". The author questions whether there is such a thing as a sincere altruistic relation of one person to another.

For students of psychoanalysis and those interested in child psychology, this short book offers much food for thought.

Diagnosis

Clinical Laboratory Diagnosis. By SAMUEL A. LEVINSON, M. S., M. D., Ph. D., director of Laboratories, Research and Educational Hospitals, Chicago, Ill.; professor of Pathology University of Illinois College of Medicine; ROBERT P. MCFATE, Ch. E., M. S., Ph. D., assistant director of Laboratories, Research and Educational Hospitals, Chicago, Ill.; assistant professor of Pathology, University of Illinois College of Medicine. Third edition thoroughly revised. Illustrated with 192 engravings and 15 plates, 7 in color. Philadelphia, Pa.: Lea & Febiger, 1946. Pp. 971. Price $10.00.

The value of this book to the student is that it takes little for granted as to previous training and experience in laboratory work. Therefore, a brief review of anatomy, physiology and biochemistry is given in order to help to understand the normal, before going into diseased tissues.

Chemical methods in common use have been brought to date. In fact all laboratory techniques have had thorough revision. Among new items are determination of the blood level of penicillin, acid phosphatase, bone marrow findings in disease with ten new pictures of bone marrow films, diodrast and inulin clearance tests, and some new chemical substances found in urine. In the chapter on tropical medicine which is new to this edition, special emphasis is placed on the biology of micro-organisms which cause disease, and their detection in the laboratory.

An effort is made to interest and stimulate the worker, and to get away from what to some students (and physicians as well) is too often considered to be "a dry subject".

SURGICAL DIGEST

By RICHARD A. LEONARDO, M. D.

Rochester, N. Y.

Trichomonas Vaginalis Reich *et al.*, found that ordinary gynecological management plus use of a mild silver protein, kaolin, and beta-lactose preparation in powder and vaginal capsule was a sufficient regimen to clean up practically all their cases of trichomonas vaginalis vaginitis.

Treatment of Infected Wounds Howe *et al.*, found that urethane is an effective topical agent to remove the gram negative bacteria in mixed wound infections. Preparations containing both urethane and penicillin therefore, would seem an ideal local preparation for the treatment of such infected wounds.

Pressure Dressings in Thrombo-embolism Pressure dressings, using cotton and adhesive tape, may be helpful in the treatment and in the prevention of thrombo-embolism, according to A. J. Lesser. The author believes a pressure dressing from toes to groin will prevent sudden changes in intravenous pressure and hence will prevent detachment of the thrombus from the venous wall. It is not wise to forget about all the other helpful procedures such as paravertebral block, anticoagulants, venous ligations, etc.

Cardiopulmonary Function after Pneumonectomy Cournand *et al.*, followed four juvenile patients through adolescence to see if their previous pneumonectomy would cause any serious changes in their cardiopulmonary function as they grew older. The followup results were quite satisfactory: two cases developed a moderate pulmonary distention, accompanied by reduction in breathing reserve and insufficient oxygenation of the arterial blood during severe physical exercises, but otherwise the results were quite good.

Perinephritic Abscess Early diagnosis of a perinephritic abscess is not simple, says L. G. Lewis. The x-rays alone often point to, but cannot clinch, the diagnosis. The psoas muscle shadow may be obliterated and often the spine is curved.towards the affected side. Psoas muscle spasm, fever, elevated sedimentation rate, dyspnea, localized pain, swelling, tenderness, etc., all are suggestive clinical signs. Often the patient has irritation of the diaphragm and may present confusing pulmonary signs that becloud the diagnosis.

Treatment of Sjögren's Syndrome In this condition the eyes and mouth are always dry. R. Leriche proved by sympathetic infiltrations that the condition could be relieved. He then operated, doing a double section of the vertebral nerve (sympathectomy on both sides). The dryness of the eyes and mouth disappeared and the woman died of other causes twenty-eight months later.

Infectious Hepatitis and Blood Transfusions P. E. Sartwell studied reports of 1762 cases of acute infectious hepatitis and found 500 had received recent transfusion of blood or blood products. Many of these cases undoubtedly are due to transmission of the jaundice producing agent or virus in the transfused whole blood or plasma. (As a result, many hospitals do *not* care to use pooled plasma any longer nor will they accept blood donors who give a history of having had jaundice).

Dissolution of Renal Calculi Often, in cases of bilateral calculi, surgery is not indicated on one side. J. J. Cordonnier reports such a case with staghorn calculus in which he succeeded in making the calculus disappear (at least to the Roentgen ray) by irrigating the kidney pelvis, using two number 6F catheters and "solution G." (an aqueous mixture of citric acid, magnesium oxide and sodium carbonate). He also placed the patient on an acidification regimen using ammonium chloride.

Excision of Moles The proper treatment for moles is thorough excision. One should be especially suspicious of possible malignant change if a mole suddenly becomes larger, more vascular, often darker in color, or ulcerates on its surface. Electrocauterization and dessication are dangerous procedures because occasionally they irritate the mole and induce subsequent malignancy. Once a malignant melanoma has arisen, it too must be excised, but often widespread metastasis has occurred already.

Presacral Neurectomy for Dysmenorrhea A. W. Tucker, Jr., reviewed the effects of two hundred and fifty-five cases of presacral neurectomies for the surgical treatment of dysmenorrhea of both the acquired and the essential types. About eighty percent of the cases with essential dysmenorrhea were relieved completely, and another ten percent were greatly improved. Among the acquired cases of dysmenorrhea, complete relief of cramps and other symptoms were obtained in only one-third of the operated cases. This is not surprising since in more than one-half of these cases the etiological agent is endometriosis, or pelvic inflammation. The operation is especially indicated in the essential cases.

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SEPTEMBER 1947

Medicolegal Notes

Hospital Insurance Policy

In an action by a husband and wife on a hospital insurance policy to recover $145, the amount expended for hospital and surgical expenses incident to an operation for appendicitis on the wife, the defense was that the husband had, in the application for the policy, represented that his wife had not had a hernia, whereas it was shown that she had had a hernia for some time. However, it was testified that she did not complain of it, and it had never bothered her. It appeared that during the operation for appendicitis, the surgeon incidentally repaired the hernia. There was, however, no evidence that any additional charge therefor was included in the surgical fee covered by the insurance. The defendant offered no evidence.

The jury answered the special questions which were involved, as follows: 1, The policy was in force at the time of the operation, 2, though it was incorrectly stated in the application that the wife did not have a hernia, 3, the statement was not made with intent to deceive, 4, the hernia did not contribute to her hospitalization and did not materially affect acceptance of the risk by the defendant; and 5, under the terms of the policy plaintiff was entitled to recover the $145 sought.

Judgment on this verdict was affirmed by the North Carolina Supreme Court, Carroll vs. North Carolina Casualty Ins. Co., 42 S. E. 2d 607, holding that the case was fairly and properly submitted to the jury.

Cost of Providing Medical Care in an Emergency

In a proceeding to recover compensation and medical expenses under the Georgia Workmen's Compensation Act, the evidence was held sufficient to authorize a finding that the employer had failed to provide the medical care owed the injured employee under the provisions of the statute. These provisions are that if, in an emergency on account of the employer's failure to provide medical care, a physician other than that provided by the employer is called to treat the employee, the reasonable cost of the service shall be paid by the employer if so ordered by the compensation board. The State Board of Workmen's Compensation is authorized in the exercise of its discretion to ratify the procurement of medical treatment after it has been rendered. (Ga. Code Ann. 114-501). American Mut. Liability Ins. Co. vs. Williams, Georgia Court of Appeals, 42 S. E. 2d 578.

Damages Not Excessive

A verdict for $2,500 for injuries requiring confinement to bed for two weeks after the accident which caused them, and resulting in headaches which would permanently recur, together with a permanent condition of nervousness with pain and disability in the lumbar spine requiring the plaintiff to abstain from labor, was held not excessive in Manzella vs. St. Louis Public Service Co., Mo. App. 202 S. W. 2d 567.

A verdict to a railroad employee for $15,000 for injuries received while using insufficient handbrakes on a railroad car was held not excessive although it might appear large in comparison with other cases where judgments for $15,000 were considered excessive by $5,000, the trial court having accepted the testimony which was favorable to the plaintiff with respect to the severity, duration and incapacitating effects of his injuries and with judicial knowledge of the value of today's dollar. The injuries included cerebral concussion, possible skull fracture, and sprains of neck and back, resulting in permanent disability to perform hard labor. The plaintiff was 51 years old and had performed hard manual labor all his life. Rush vs. Thompson, Missouri Supreme Court, 202 S. W. 2d 800.

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*Lehr, D.: Proc.Soc.Exper.Biol.& Med. *58*:11 (Jan.) 1945

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Recent Developments in Malaria Therapy

Speaking in a Symposium at the Army Medical Center, Dr. Alf S. Alving, University of Chicago, advised that American scientists tested approximately 15,000 chemical compounds during the war in their search for malaria cures or suppressives, but only the 13,276th (pentaquine) offered promise of a "cure" for the tertian malaria which caused loss of 16,000,000 manpower days to the army and navy, together with 363 deaths.

Several drugs were developed which "suppressed" the disease which was one of the greatest single medical problem of the war. Even though a soldier became infected the characteristic chills and fevers did not appear while such a drug was taken regularly, and the man continued to work or fight. The malaria, however, was almost certain to appear as soon as the drug was stopped.

There was one drug which was known to "cure" the benign tertian malaria caused by the bite of a mosquito known as *P. vivax,* found in both the Pacific and Mediterranean areas. This form of the disease is highly disabling but seldom fatal. It was highly toxic, altogether too much so for use in the field.

Hundreds of compounds related to plasmochin were tested with experimental animals, both for toxicity and effectiveness against malaria. Finally one known as pentaquine was found to be only about half as toxic as plasmochin and to have considerably greater curative value.

Before the new drug was used with soldiers or sailors it was tested extensively on a volunteer basis with convicts in state prisons and conscientous objectors. Each individual volunteered to receive infections with the malaria.

The tests to date indicate, that the new drug in appropriate doses will reduce the relapse rate in severely infected patients from 98 percent to 16 percent. In moderate infections the relapse rate can be cut to four percent. Pentaquine works best, he said, when combined with quinine.

It is not, however, a safe drug for self medication and requires hospitalization, since several complications are possible. In very heavy infections several treatments may be necessary.

Two valuable suppressive drugs were developed, in addition to atabrine, which was used extensively and with fair success early in the war. These are the American chloroquine and the British paludrine. Both were superior in certain aspects to atabrine and each possesses certain advantages which must be weighed against the particular circumstances.

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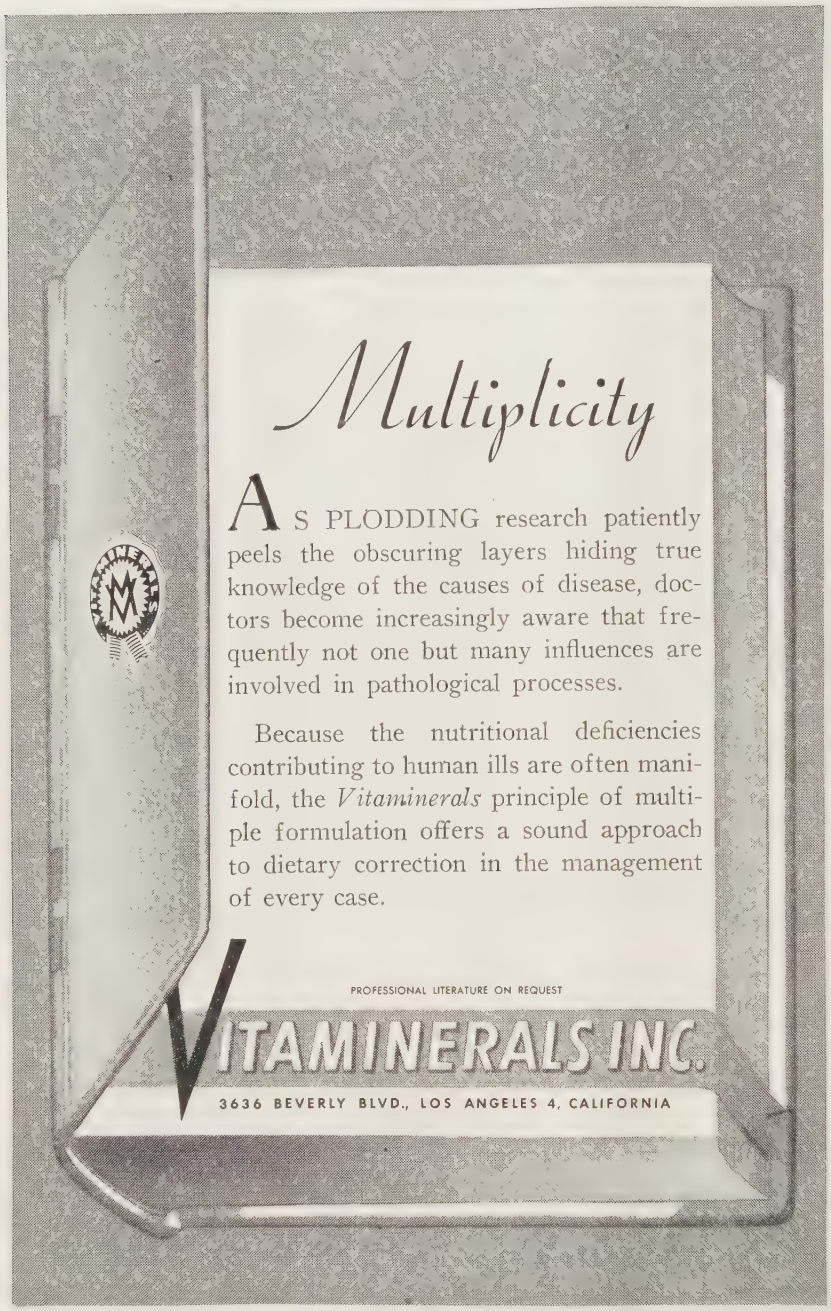
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Streptomycin in the Treatment of Tuberculosis

In a Symposium at the Army Medical Center, Lt. Col. John B. Wallace, M. C., Fitzsimmons General Hospital, declared that streptomycin has a beneficial effect, at least temporarily, in a majority of the cases of tuberculosis in which it is used.

However from observations now underway at the Army's Fitzsimmons General Hospital at Denver, a center for tuberculosis treatment, the treatment is accompanied by some real dangers.

In the spring of 1946 the Army, Navy and Veterans' administration were allotted an amount of the still rare and costly drug sufficient to permit an investigation of its efficacy, particularly in respect to the disease for which extravagent claims had been made. Fitzsimmons Hospital was selected as the army installation for this project, carried out under the Division of Research and Development of the Office of The Surgeon General.

It is still too early to make definite pronouncements, but no doubt remains that streptomycin should be used without delay in cases of tuberculous meningitis, which usually are rapidly fatal. It also may be used with discretion and probably good results in cases of pulmonary tuberculosis.

It is by no means a cure, however, and there is some evidence that use of the drug slows down the development of the body's natural resistance to the tuberculosis germ. It may temporarily mask symptoms which will appear in more aggravated form later.

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When adequate treatment and control of the trichophyton infection was manifested, treatment of the indolent congestive ulcer was instituted.

In a majority of the patients, the general health was observed to be not too good. These patients were placed on a high protein diet, supplemented with vitamin A, 25,000 units, and vitamin C, 100 mg., after each meal."

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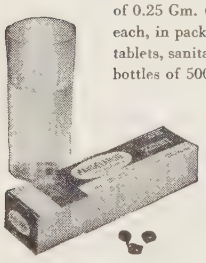

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Shering Research Grants

Mr. Francis C. Brown, president of Schering Corporation of Bloomfield and Union, New Jersey, has announced an additional number of grants for endocrine and pharmacological research studies awarded by Schering to research foundations, medical and pharmacy colleges.

A Schering fellowship in endocrinology is again supported at the University of Oregon Medical School department of physiology, to continue special research under the direction of Dr. Carl Heller, associate professor of medicine and physiology.

Another Schering Fellowship has been established at the University of Montreal under the direction of one of the world's foremost endocrinologists, Dr. Hans Selye, professor and director of the Institute of Experimental Medicine and Surgery.

Dr. Bernard A. Watson, director of the division of medicine at the Clifton Springs Sanitarium and Clinic, Clifton Springs, New York, will supervise studies of the daily excretion of 17-ketosteroid group and its relation to the clinical use of the male sex hormone.

Clinical studies with oleander glucosides in cardiac patients will be conducted at Cornell University College of Medicine, New York, under the supervision of Drs. McKean Cattell and Harry Gold, professor and associate professor, respectivelly, of pharmacology.

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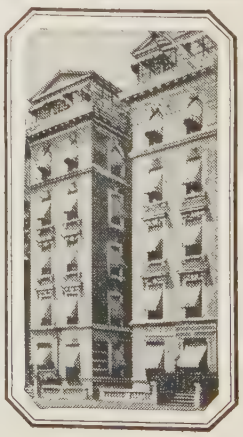

weight and strength of premature infants, will be studied by Dr. E. Kost Shelton, associate professor of medicine, University of Southern California, and director of the endocrine clinic, Los Angeles County Hospital.

Funds were allotted to continue studies on hyaluronidase at the Jewish Hospital of Brooklyn under the direction of Dr. Charles Birnberg, and to Cornell University, Department of Zoology, Ithaca, New York, under the direction of Samuel L. Leonard, associate professor of zoology.

Pharmacologic studies with cardiac glucosides including that of oleander, and a drug standardization method using chick embryo hearts in comparison with the frog and official cat methods will be supported under grant to the Montana State University, School of Pharmacy. This research is under the direction of Dean C. H. Waldron.

Epidemiological Record

To speed distribution of *The Weekly Epidemiological Record* throughout the Western Hemisphere, the World Health Organization Interim Commission recently began distribution of a special printing of the publication from its headquarters office, New York.

The publication, the official international review of epidemiological intelligence, now in its twenty-second continuous year of issue, is published in French and English.

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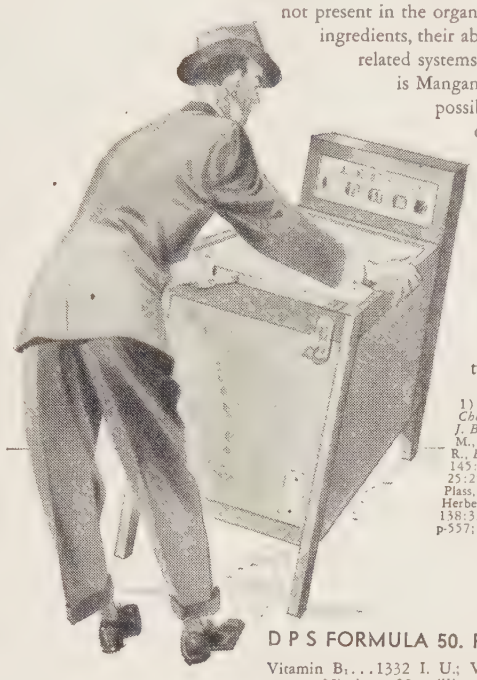

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New Progress Reported in Antithyroid Studies

Dr. A. J. Bergmann of the Sterling-Winthrop Research Institute, at a meeting of the Federation of American Societies for Experimental Biology, revealed that progress is being made by scientists in efforts to find new methods for treating thyroid cases.

Two new antithyroid compounds announced by Dr. Bergmann are cyclopropylthiouracil and cyclohexylmethylthiouracil. Both, he reported, were found to be "active in laboratory test animals."

Dr. Bergmann told of the preparation and assaying of twelve new thiouracil derivatives at the Institute with Doctors S. Archer, J. O. Hoppe, and T. J. Becker. The compounds prepared were compared with thiouracil, first introduced into medicine about three years ago and n-propylthiouracil a more recent development. Clinical experiences with thiouracil have indicated that serious toxic reactions sometimes occur, while in the case of n-propythiouracil, it has been found that less of the drug is required to produce the same beneficial action as the former compound, when given to patients suffering from an over-active thyroid.

Dr. Bergmann explained the activity of antithyroid drugs can be determined in two ways in experimental animals, namely: 1. by determining the effect on the increase in weight and reduction of the iodine content of the thyroid gland, or 2. by the effect in reducing the amount of oxygen consumed in a given time.

"Measured by the first test, propylthiouracil was found to be slightly more active than cyclopropylthiouracil, both being at least ten times as potent as thiouracil", Dr. Bergmann stated.

"Cyclohexylmethylthiouracil was found to be about five times as active as thiouracil. However, when the activity of the compounds was determined by the effect in reducing the oxygen consumption of the rat after three weeks of medication then the activity ratios relative to thiouracil are as follows: propylthiouracil at least 30; cyclopropylthiouracil, 23; and cyclohexylmethylthiouracil 8.

"Since cyclohexylmethylthiouracil by the single acute toxicity test is less than one-fourth as toxic in the rat as the other compounds it has the greatest therapeutic index of the four compounds studied," Dr. Bergmann concluded.

* * *

The disease known as *Erysipiloid of Rosenbach* is named after Julius Frederick Rosenbach, a German pathologist and surgeon, who investigated the disease both clinically and bacteriologically in 1887. The disease was probably first clearly described by Morrant Baker as erythema serpens.

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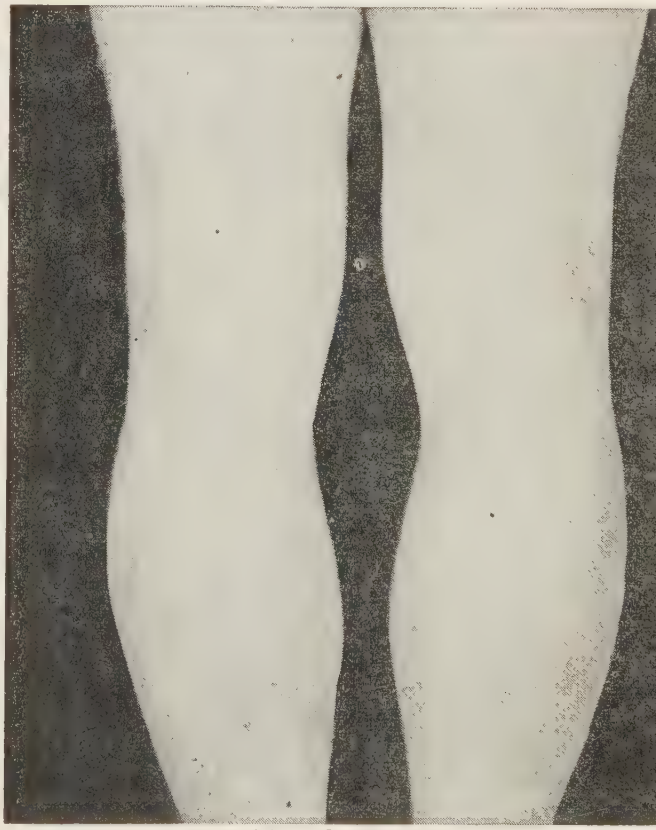

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NEW PRODUCTS

New Cough Syrup

A new cough syrup called Deka, developed by the Sterling-Winthrop Research Institute, is now being offered by Winthrop Chemical Company, Inc., for prescription by physicians through retail drugstores.

Embodying the essential principles of similar preparations, Deka has a pleasant aromatic flavor. It is described as "an effective sedative-expectorant cough preparation for those disagreeable, sleep-robbing, nonproductive coughs which the physician is so often called upon to treat in daily practice." Its use likewise "tends to liquefy the thick tenacious secretion that irritates the bronchial mucous membrane and promotes expectoration, thereby relieving discomfort."

Each fluid ounce of the preparation contains 1 grain codein sulfate; 2 grains calcium iodide, 2 grains chloroform; with wild cherry, tolu, squill, yerba santa, citric acid and menthol. The solution is 6.5 per cent alcohol and 3 per cent glycerine. The codeine content is 1 grain per fluid ounce.

Staticin-Penicillin Therapy

A new drug, 'Staticin' Caronamide, which inhibits the renal tubular (kidney) excretion of penicillin and elevates the concentration of penicillin in the plasma from two-to-seven-fold, has been placed on the market by Sharp & Dohme, Philadelphia, Pa.

According to reports, combination 'Staticin'-penicillin therapy promises successfully to combat such highly resistant infections as subacute bacterial endocarditis and osteomyelitis—diseases against which pencililin alone has been relatively ineffective.

In clinical tests conducted at the Pennsylvania Hospital, Philadelphia, and reported in the August issue of the *American Journal of Medicine*, by Christopher C. Shaw, M. D., William P. Boger, M. D., J. William Crosson, M. D., Medical Research Division, Sharp & Dohme, Inc., Glenolden, Pennsylvania, Walter W. Kemp, M. D., William S. M. Ling, M. D., and Garfield G. Duncan, M. D., Department of Medicine, The Pennsylvania Hospital, Philadelphia, it was shown that 'Staticin' given in conjunction with either orally or parenterally administered penicillin gives the same two-to-seven-fold increase in penicillin blood levels.

Of six afebrile patients given penicillin and 'Staticin' by oral administration simultaneously every four hours, five showed enhancement of penicillin blood levels two to seven times those observed during control periods. One patient failed to demonstrate any detectable level of penicillin in the plasma before, during or after administration of penicillin with or without 'Staticin'.

In five additional patients, who received intramuscular penicillin and oral 'Staticin', enhancement of penicillin levels averaged 5.7 times the penicillin plasma levels when 'Staticin' was not administered.

In three other patients receiving penicillin in beeswax and oil by intramuscular injection, the authors found that 'Staticin' increased the plasma concentration of penicillin, but the effect of a single orally administered dose of caronamide was lost at the end of four hours. This was because of continued elimination of the compound by glomerular filtration, they report. The new drug should therefore be given by mouth at intervals of at least four hours, preferably every three hours, the doctors conclude.

During the study, 'Staticin' was given orally in doses of 2.0 gm. every four hours in all fourteen cases. No evidence of systemic toxicity was noted in those patients to whom the new compound was given.

High Potency Oreton-M Tablets

Unlimited supplies of Oreton, testosterone propionate, and Oreton-M, methyltestosterone, are now available, according to Schering Corporation, Bloomfield, N. J. The firm has also introduced a new 25 mg. high potency tablet of Oreton-M.

This new higher potency tablet of Oreton-M is used with great success in the treatment of the male climacteric, premenstrual tension, angina pectoris and other commonly encountered clinical entities. It offers greater convenience and economy to the patient.

Price Reductions on Male Hormone Preparations

Roche-Organon Inc., Nutley, N. J., have announced another reduction in the prices of their male sex hormone preparations Neo-Hombreol Vials and Ampuls (testosterone propionate), Neo-Hombreol (M) 10-mg Tablets (methyl testosterone), and Neo-Hombreol (M) Dosules (methyl testosterone) are now available at a thirty-five percent reduction in price. There has been a twelve percent reduction on 25-mg Neo-Hombreol (M) Tablets (methyl testosterone) recently introduced.

The Roche-Organon androgen products which have been reduced in price are available in the following potencies and package sizes: Neo-Hombreol Vials, 10cc, in 3 strengths—10 mg, 25 mg, and 50 mg per cc; Neo-Hombreol Ampuls, 1cc, in 3 strengths—5 mg, 10mg, and 25 mg, boxes of 3, 6 and 50; Neo-Hombreol (M) Tablets in 2 strengths—10 mg, boxes of 15, 30, and 100, and 25 mg, boxes of 15 and 100. Neo-Hombreol (M) Dosules in 1 strength—4 mg, boxes of 25.

Liver Repair Therapy Developed

U. S. Vitamin Corporation, Casimir Funk Laboratories, Inc., New York 17, N. Y., has made available a new preparation, Methischol capsules and syrup, for the prevention and repair of liver damage and injuries. The company states that the product combines drugs which have provided dramatic results in liver conditions often considered hopeless.

Methischol supplies methionine, choline and inositol in a B complex base derived from liver. All have undergone extensive pharmacologic and clinical investigation. Their adjunctal use has resulted in frequent arrest of the disease, and often restored patients to good health and normal activity in cirrhosis of the liver, fatty infiltration, functional impairment of the liver, toxic hepatitis, infectious hepatitis, and hepatic damage from industrial poisons.

U. S. Vitamin Corporation claims several advantages for Methischol: (1) supplies three lipotropic agents, choline, inositol, and methionine, believed to be specific for the prevention and repair of certain types of liver injury; (2) furnishes liberal amounts of the natural vitamin B complex concentrated from liver; (3) provides essential methionine, a readily absorbed and utilized amino acid factor necessary for liver repair; (4) is well tolerated, non-toxic, free from side-reactions, with dosage easily controlled.

New Estrogenic Hormone

The National Drug Company of Philadelphia has announced the addition of Aquadiol, an aqueous suspension of microcrystalline alpha-estradiol, the natural estrogenic hormone of the ovary, to their line of estrogenic hormones. Its actions and uses are those of estrogenic substances in general, possessing all the virtues of the naturally existing follicular hormone, and free from the undesirable side reactions which accompany the use of stilbestrol derivatives.

The use of suspensions of crystalline alpha-estradiol in an aqueous medium offers several important advantages over solutions of the hormone in vegetable oil. First, a depot of the hormone is provided from which slow and uniform absorption is assured. Second, allergic reactions such as frequently occur from vegetable oils are eliminated, and third, aqueous preparations are adaptable not only for intramuscular use, but for subcutaneous injection as well.

Aquadiol is indicated in the treatment of estrogenic hormone deficiency states as in the menopausal syndrome, amenorrhea, hypogonadism, vaginitis, kraurosis, pruritus vulvae and palliation of local discomforts from prostatic carcinoma and its metastases. The suggested dosage—preferably intramuscularly—0.11 mg. to 0.22 mg. Alpha-estradiol (10,000 to 20,000 units) or as required. It may also be given subcutaneously.

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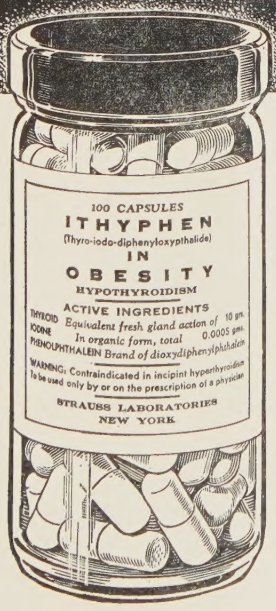

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